

**BY ORDER OF THE COMMANDER  
AIR FORCE SPACE COMMAND**



**AIR FORCE SPACE COMMAND HANDBOOK  
32-1004**

**2 JANUARY 1996**

**Civil Engineering**

**FACILITIES EXCELLENCE PROGRAM AND  
STANDARDS HANDBOOK**

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OPR: CEC (Lt Col Timothy M. Fink)

Certified by: CE (Col Earnest O. Robbins II)

Pages: 107

Distribution: F

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This handbook provides guidance and standards to be applied in achieving facilities excellence within Air Force Space Command units. Standards have been proven by experience in industry and in other military applications to be effective in maintaining the most cost efficient life cycle for the physical plant and infrastructure supporting our missions. This handbook implements provisions of [AFPD 32-10](#). It does not apply to the Air Force Reserve or Air National Guard.

## Chapter 1

### THE FACILITIES EXCELLENCE PROGRAM

#### 1.1. Program Philosophy:

##### 1.1.1. Purpose:

1.1.1.1. The Facilities Excellence Program has two main functions. First, it provides efficient, fully functional facilities that support our mission and represent a wise investment of public funds. This aspect of facilities excellence involves quality design, construction, maintenance, and repair of our facilities and infrastructure to assure mission requirements are fully met at the lowest life-cycle cost. Second, facilities excellence assures the optimum use of existing facilities to minimize new Military Construction requirements. In this context, facilities excellence is not “gold plating,” but the provision of facilities that fully meet mission needs and the needs of the people performing that mission, both functionally and aesthetically. Facilities excellence is not only a set of specific projects near the end of the Facilities Excellence Plan (FEP). It should be an integral part of every facility project.

1.1.1.2. Facilities excellence is more than the physical facilities. It is also an attitude and a state of mind that motivates people to take pride in and care for their working and living environment. The appearance of the workplace can have a positive impact on the pride and productivity of a unit. Facilities excellence promotes an attitude of attention to detail, pride in the workplace and individual and unit performance that reflects in mission performance and productivity. This aspect of facilities excellence is supported by the self-help program, wherein people can provide for their own facility needs much sooner and create the element of pride in accomplishment that fosters higher unit performance. They will also take better care of facility improvements they helped to create. In this sense, facilities excellence is characterized as a journey, not a destination.

##### 1.1.2. Facilities Excellence Guide.

1.1.2.1. Command policy, general guidelines, specific guidelines, and pictorial examples of facilities excellence within AFSPC are included in the *AFSPC Facilities Excellence Guide* published by HQ AFSPC/CE.

#### 1.2. Facilities Excellence Plan:

##### 1.2.1. Purpose.

1.2.1.1. Achieving facilities excellence requires careful planning and articulation of standards. While this handbook defines Command-wide standards, there are many standards that are and must be unique to an installation, whether the installation is a main base or a small geographically separated unit. To assure these installation-specific standards are fully developed and consistently applied, a FEP is required at each installation, regardless of size. AFSPC installations with or without a Comprehensive Plan or General Plan should develop the FEP as a stand alone document. Installations with a Comprehensive Planning Framework in place may include the FEP as a chapter within this document. When an AFSPC organization is a tenant on a non-AFSPC installation, the FEP should include standards only for those issues or areas for which the AFSPC organization has responsibility. Coordinate the FEP with the host-tenant agreement. The FEP must recognize the cultural, environmental, climatic and existing facility conditions peculiar to an

installation and define the appropriate styles, finishes, materials and furnishings to be used to achieve the best facility life-cycle costs and still retain the appropriate environment for people to achieve their highest productivity and efficiency.

#### 1.2.2. Elements.

##### 1.2.2.1. The FEP should include the following elements:

1.2.2.1.1. A mission statement for the unit. For large installations, this should include the host unit, such as the wing, and significant major subordinate units such as groups and tenants. The statement should be a concise one or two paragraph statement clearly defining the mission performed by the unit, and characterizing the types of facilities required to support that mission.

1.2.2.1.2. A brief description of the installation. This section of the plan should provide essential statistics of the installation, such as the size of population it supports, the number of acres, number of buildings, miles of roads, etc. It should also include a clear description of the regional, cultural, and climatic conditions and existing architectural styles and materials to be found on the installation. This section should provide a basis for the selection of architectural styles and materials that have been selected as the installation standards. When feasible, photos of examples illustrating desirable features should be included in this section.

1.2.2.1.3. Definition of standards to be implemented at the installation. These standards should, as a minimum, define the acceptable quality, style and materials to be used for the following:

1.2.2.1.3.1. Exterior building character (by zone if necessary due to the size or architectural character of buildings on the installation). This is where the architectural theme should be identified and justified.

1.2.2.1.3.1.1. Roof system. Define acceptable roofing systems, styles, materials, colors and finishes.

1.2.2.1.3.1.2. Fenestration. Identify the style of fenestration that is acceptable. Include specific information related to fenestration such as double or triple glazing, tinting, window frame material, acceptable window styles, and colors of window frames and window glass.

1.2.2.1.3.1.3. Wall/Exterior finishes. Clearly define the exterior finishes that are both acceptable and specifically not acceptable on the installation, and where various finishes are appropriate. Include approved and allowed colors, textures, and decorative items if necessary.

1.2.2.1.3.1.4. Paint colors for base (field) and trim. Define the approved exterior paint colors for both base (field) and trim applications. Define where these colors are appropriately used. Provide paint numbers of industry standards and/or actual paint chips to eliminate guess work.

1.2.2.1.3.2. Building interior finishes. Define approved facility interior finishes. It is recommended that color boards be prepared showing examples of interior finishes and how they coordinate with other elements of the interior environment, such as ceiling materials, floor coverings, trim, furnishings, etc.

1.2.2.1.3.2.1. Floor coverings. Define the style, color, quality level, and appropriate application for the various approved floor coverings to be used on the installation. Include specific information for carpet, vinyl tile, linoleum, painted floors, special floor coverings in shop and maintenance areas, and raised computer room flooring.

1.2.2.1.3.2.2. Furnishings. Furnishings include modular, freestanding, and systems furniture style, configurations, electrical wiring, communications connectivity, minimum standards, and colors if applicable.

1.2.2.1.3.2.3. Wall coverings. Define the colors, textures, quality levels, and appropriate application for the approved wall coverings used on the installation.

1.2.2.1.3.2.4. Interior plants and artwork. Identify approved plants and artwork styles to be used on the installation, and where they are appropriate. Provide guidance on the height and spacing of artwork.

1.2.2.1.3.2.5. Trim materials, style and colors. Define trim elements as to style, color, material, texture, and size for such elements as baseboard trim, chair rail, and door and window trim. Include elements such as the appropriate door hardware, and light fixture type and style. Clearly articulate where these trim elements are appropriate, by individual building or room if necessary.

1.2.2.1.3.2.6. Interior color palettes. Define all of the approved interior color combinations. Define the type and quality level of materials to be used in various applications.

1.2.2.1.3.2.7. Interior signage. Define the style, type, material, lettering size and style, to be used on all interior signs on the installation, or by facility or zone if applicable. Select a system that allows easy changes to lettering. Interior signage should also conform to the requirements of AFP 88-40, *Sign Standards*.

1.2.2.1.3.2.8. Window treatments (i.e., drapes, blinds). Define the type of window treatment to be used, along with the approved colors, style and texture. Standardize treatments within buildings or groups of buildings to the maximum extent possible.

1.2.2.1.3.3. Landscaping. Define the style and kinds of landscaping to be employed on the installation, by zone or application (i.e., parking lot, building entries).

1.2.2.1.3.3.1. Outdoor plant list. Include an approved plant list suitable for the environment and climatic conditions yet with enough variety to avoid monotony.

1.2.2.1.3.3.2. Xeriscaping materials. Where xeriscaping is appropriate, define the materials to be used, including the type, color and size. Clearly identify the appropriate application for the various types of approved materials.

1.2.2.1.3.4. Edging, paving and curbing. Define the approved materials, styles and colors to be used in various applications throughout the installation. Identify appropriate applications of approved materials by zone or area if necessary.

1.2.2.1.3.5. Exterior amenities. Define appropriate exterior amenities for the installation. Provide specifications/definitive drawings where appropriate. These exterior amenities should be consistent with the architectural theme of the installation or area. These amenities would include trash receptacles, newspaper vending machines, and similar items.

1.2.2.1.3.5.1. Exterior furniture. Define the style, colors, texture, and type of exterior furniture to be used throughout the installation or area.

1.2.2.1.3.6. Exterior signage. Exterior signs, to include directional, traffic, informational signs, and all other signs on the installation. Define the specific materials, mounting scheme, etc. for the installation. These standards should be consistent with the AFSPC standards provided elsewhere in this handbook and comply with AFP 88-40 guidance.

1.2.2.1.3.7. Fences. Define the approved fence styles, materials, colors and sizes for fences throughout the installation. Identify locations where different styles and types of fences are appropriate. Include the installation Fence Plan (see paragraph 2.1.2.) either directly or by reference.

1.2.2.1.3.8. Utility and dumpster enclosures. Define the installation standards for the size, style, materials, colors, and type of utility and dumpster enclosures to be used on the installation.

1.2.2.1.3.9. Exterior lighting. Define the type, style, and kinds of exterior lighting and where it is appropriately used. Define approved lamp fixture types from pedestrian walkway bollards to street lamps.

1.2.2.1.4. Dormitories and military family housing. Define the standards to be employed in the interiors, exteriors, common areas and recreational areas in dormitories and military family housing neighborhoods, where unique to dormitories and family housing. Reference the Housing Comprehensive Plan and ensure it is coordinated with the FEP.

1.2.2.1.5. Other special interest items. Articulate and define standards for other special interest items peculiar to a particular installation. This may include historical features, parks or monuments, or special display areas.

1.2.2.2. Wherever possible, include photographs, samples or color boards in the FEP to clearly illustrate and define standards.

### 1.2.3. Supporting Plans.

1.2.3.1. Incorporate installation level plans, such as the Fence Plan, Sign Plan, Paint Plan, Curbing Plan, etc., into the FEP by reference. This can help avoid redundancy in planning.

### 1.2.4. Projects to be Accomplished.

1.2.4.1. The final section of the FEP should identify specific facilities or projects to be accomplished within the next two years. It should address what is intended to be done and include a tentative schedule for completion.

### 1.2.5. Annual Review.

1.2.5.1. The FEP should be reviewed and revalidated annually by the installation Facilities Board. Provide a copy with any changes to HQ AFSPC/CEC to assist in resource advocacy.

## 1.3. Commanders' Facility Assessment (Cfa) Program:

### 1.3.1. Purpose.

1.3.1.1. The FEP also serves a very important purpose in relation to the annual CFA Program. The FEP should establish standards to help commanders define how well their facilities meet mis-

sion requirements by establishing a common baseline of what is acceptable in facilities design, condition, and furnishings. Using a standard, well documented baseline with which to judge facilities improves CFA Program credibility and enhances resource advocacy opportunities.

#### **1.4. Facilities Excellence Recognition Program:**

##### **1.4.1. Purpose.**

1.4.1.1. A key element of the AFSPC Facilities Excellence Program is the Facilities Excellence Recognition Program. This program annually recognizes the large and small installation that has the best maintained facilities within AFSPC. It also recognizes other areas of achievement, such as the most improved installation, and the best dormitory room on each installation. The full objectives, procedures, and awards presented under this program are included in AFSPCI 32-1001, *Facilities Excellence Recognition Program*.

## Chapter 2

### FENCE STANDARDS

#### 2.1. General:

##### 2.1.1. Applicability.

2.1.1.1. All AFSPC installations should install fences and screens IAW the standards established in this chapter and adhere completely with the provisions of AFI 31-209, *The Air Force Resource Protection Program*, and AFI 31-101, *The Air Force Physical Security Program* for controlled and restricted areas. The Type A fence identified in AFI 31-101, Paragraph 7.4, will be used for all possible permanent restricted areas. AFSPC units tenant on another MAJCOM/DoD installation will adhere to the host command fence policy.

##### 2.1.2. Fence Plan.

2.1.2.1. Fences are necessary to protect property, define boundaries, and conceal unsightly equipment. Each installation should have a Fence Plan that minimizes fence requirements and identifies appropriate solutions for fencing where required. The goal of every installation should be to minimize the amount of fencing due to the generally undesirable visual aspects and the cost of maintaining it. The fence standards approved for an installation should also be a part of the FEP. The plan should identify approved fence styles and material types and where they should be used. Fence styles should be compatible with the installation architectural theme. Apart from the FEP, the Fence Plan should address priorities, phasing, and tentative schedules for funding and execution. Careful planning is necessary to assure fences satisfy the intended purpose with the appropriate materials.

#### 2.2. Types Of Fences And Screens:

##### 2.2.1. Perimeter Fences.

2.2.1.1. Perimeter fences will be installed at all AFSPC installations where encroachment or civilian intrusion may occur. Wings should evaluate each site for the perimeter fence requirement. Thule AB, Clear AB, and Ascension AAF are examples of installations which do not require perimeter fencing because of their isolated geographic locations. Perimeter fences will normally be a minimum of 6 feet high and may be chain link, decorative metal, masonry, concrete, or a combination thereof. The perimeter fence will establish a legal boundary and a physical barrier to unauthorized entry.

##### 2.2.2. Security Fences.

2.2.2.1. Security fences interior to the installation boundary should be minimized and present the appropriate degree of security for the resources being protected. These fences may be chain link, decorative metal, masonry, concrete, or a combination thereof. Theme fence (generally the design and materials relating closest to the installation's architecture) is usually the costliest because of the materials and workmanship involved. The use of theme fencing should be limited to high-visibility public areas. Other less costly but effective fence designs should be considered for other functional use areas of the installation.

##### 2.2.3. Chain Link Fences.

2.2.3.1. With few exceptions, chain link fencing should be used only for perimeter fencing, security for restricted or controlled areas such as flightlines, launch complexes, missile alert facilities, critical communications facilities, and for some industrial areas. Chain link fencing may also be appropriate for Military Family Housing to define yards and restrain small children or pets. If chain link fence is used, outriggers with three strand barbed wire and/or concertina wire should only be used for designated permanent restricted areas. Continually challenge the need for outriggers on chain link fencing. Bulk storage or equipment yards for Supply, Transportation, and Civil Engineering, etc., do not require the barbed wire outrigger and/or concertina wire on the top of chain link fence. Chain link fence should be corrosion resistant material to reduce maintenance. Coated fence fabric is recommended, and where used, fence posts must be coated with the same material. Wood, metal or vinyl slats will not be used in chain link fencing. When concealment of structures or equipment is a primary purpose of the fence, a type other than chain link should be used or a thick screen of evergreen plant materials may be more appropriate.

#### 2.2.4. Metal Fences.

2.2.4.1. Other metal fencing can be used if it is compatible with the installation architectural theme. This kind of fencing can provide effective security and screening when used appropriately. Any type of metal fencing should be corrosion resistant to reduce maintenance. Barbed wire fence is discouraged, but may occasionally be appropriate, such as in areas where government land is leased for grazing purposes.

#### 2.2.5. Wooden Fences.

2.2.5.1. Wooden fencing can be an alternative for screening, but should be evaluated for life-cycle-cost when compared to a permanent material. When used, wooden fences should be stained to complement adjacent color schemes and to reduce maintenance. Wooden fences are most appropriate in recreational and housing areas. Plant materials are an excellent method of “softening” the visual impact of wood.

#### 2.2.6. Masonry and Concrete Fences.

2.2.6.1. Masonry and concrete fences are attractive and durable, but have a higher initial cost, and thus should be used sparingly. However, they may compare favorably on life-cycle costs. They should be used when screening is a major function of the fence. The materials used must match adjacent facilities and/or comply with the installation FEP. Long masonry or concrete panel walls are very monotonous and should be staggered, or otherwise articulated. Masonry walls should be capped. Masonry walls are recommended at installation gateways and to separate housing from adjacent land uses.

#### 2.2.7. Equipment Screens.

2.2.7.1. Careful attention must be given to fences intended to screen heating, ventilation, and air conditioning (HVAC) equipment. Provisions must be made to allow adequate air flow for proper operation of HVAC equipment and to provide sufficient maintenance space. Metal fencing surrounding electrical equipment should be avoided if possible, but if used, must be bonded and grounded according to the National Electrical Safety Code and the National Electrical Code.

#### 2.2.8. Earth Berms.

2.2.8.1. Earth berms can be effectively used in place of conventional fencing. Berms are appropriate in high-visibility public areas with undesirable views to provide concealment where secu-



urity is not a great concern. When used, earth berms must be appropriately landscaped and maintained. Ensure that berms are not too large (out of scale) nor too steep to mow.

## **2.3. Mow Strips:**

### **2.3.1. Design.**

2.3.1.1. When installing new fences, consideration should be given to installing a mowing strip under the fence to reduce grass and shrub trimming requirements. Mow strips can be either of concrete or gravel. Mow strips are recommended for built-up areas requiring frequent landscaping maintenance or lawn mowing, and where appropriate, under high security fences. They are not recommended in xeriscaped areas and undeveloped areas. Special care must be given to gravel mow strips or they can be hazardous to mowers.

### **2.3.2. Concrete Strips.**

2.3.2.1. Concrete mow strips should be a minimum of 12 inches wide (6 inches either side of the fence centerline) to enable grass mowing equipment to adequately trim grass to eliminate the need for further manual trimming with "weed eater" type equipment.

### **2.3.3. Gravel Strips.**

2.3.3.1. Gravel mow strips should be a minimum of 24 inches wide (12 inches either side of the fence centerline) and be treated or configured with an underlayment to prevent vegetation growth.

## Chapter 3

### HARDSCAPE STANDARDS

#### 3.1. Curbs:

##### 3.1.1. Applicability.

3.1.1.1. All AFSPC installations should install curbing according to the AFSPC standards established in this chapter and the provisions of AFJMAN 32-1020 (AFM 88-7 Chapter 5). Existing curbing should not be replaced just to conform to these standards, but should be brought into conformance as streets, roads and parking areas are repaired (or constructed new). AFSPC units tenant on another MAJCOM/DoD installation will adhere to the host command curbing policy.

3.1.1.2. AFSPC is committed to curbing all installation streets and parking areas. For the purpose of this policy, streets are defined as paved roadways in built-up areas of installations. Roads are defined as paved roadways connecting dispersed built-up areas. Curbing offers the following benefits: channels and confines vehicle traffic more effectively; provides for control and management of stormwater runoff; prevents shoulder erosion of paved surfaces; provides a more safe separation between pedestrian traffic and vehicle traffic; prevents vehicle access to landscaped and turf areas, thus reducing erosion and environmental damage; and presents a more ordered and defined image for our installations.

3.1.1.3. All paved streets in cantonment or built-up areas should be curbed. Dirt and macadam roads will not be curbed. Perimeter roads need not be curbed. Paved roads that traverse long stretches of undeveloped areas need not be curbed if they have proper drainage, built-up shoulders, and minimal intersecting roads. When planning curb construction, careful consideration must be given to possible impacts on stormwater management. High curbs requiring backfill can alter existing stormwater drainage patterns and disturb on-site percolation. Stormwater permitting may also be required by regulatory agencies, with associated retention ponds, swales, or other water control devices.

##### 3.1.2. Curb Types.

3.1.2.1. Three types of curbs are acceptable for use at AFSPC installations. They are barrier curbs; mountable curbs; and header curbs. All curbs will be concrete. Asphalt curbs are not appropriate as they are not durable and thus expensive to maintain. Selecting an incorrect curb section for a particular application is not an improvement to an uncurbed street.

3.1.2.1.1. Barrier curbs (Figure 3.1.) are most appropriate for parking lots and interior installation streets. Barrier curbs will have a steeply sloped to nearly vertical face at least 6 inches high. These curbs may need cut-outs for handicapped access, mower access, and possibly drainage cuts. They should be used wherever more strict vehicle control to prevent access onto turf or landscaped areas is required. Where barrier curbs are used, the ground surface should be level with the back, elevated edge of the curb.

3.1.2.1.2. Mountable curbs (Figure 3.2.) are appropriate for housing areas and interior installation streets. They do not normally need cut-outs for handicapped access or for mower access. Since they will allow vehicles to ride over the top, they should not be used in parking lots. Where mountable curbs are used, the ground surface should be level with the back, elevated edge of the curb.

Figure 3.1. Barrier Curb.

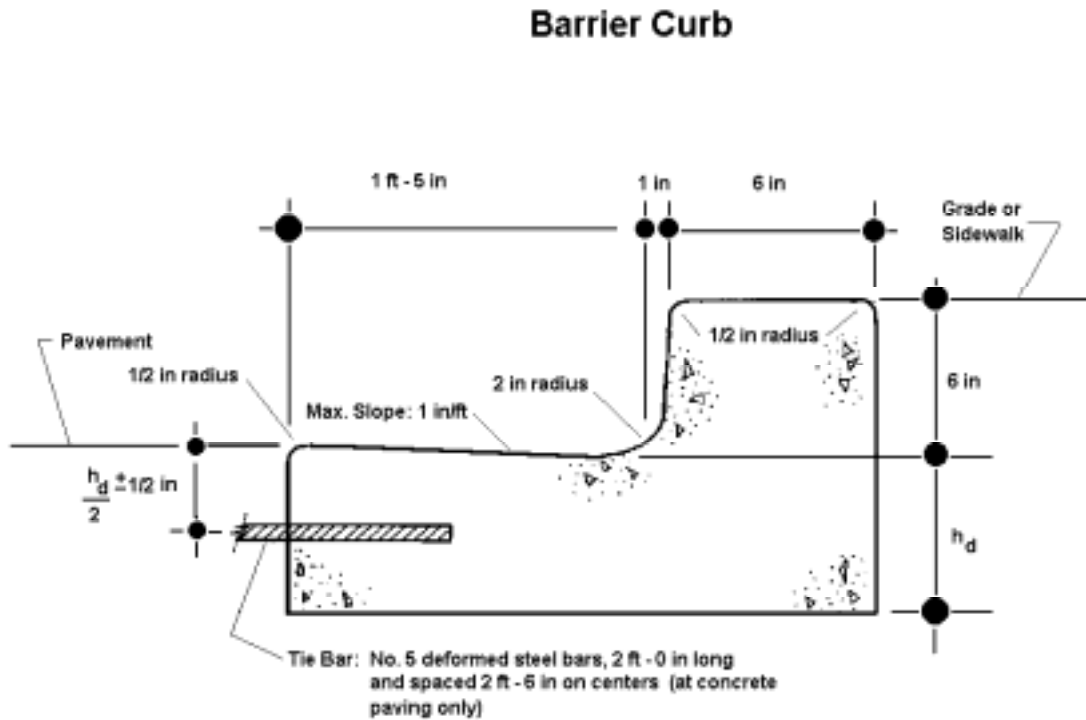
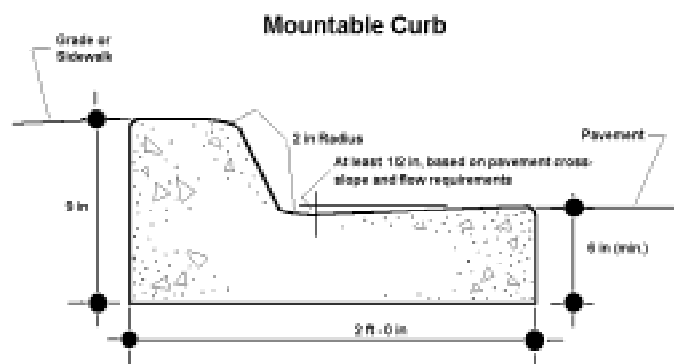
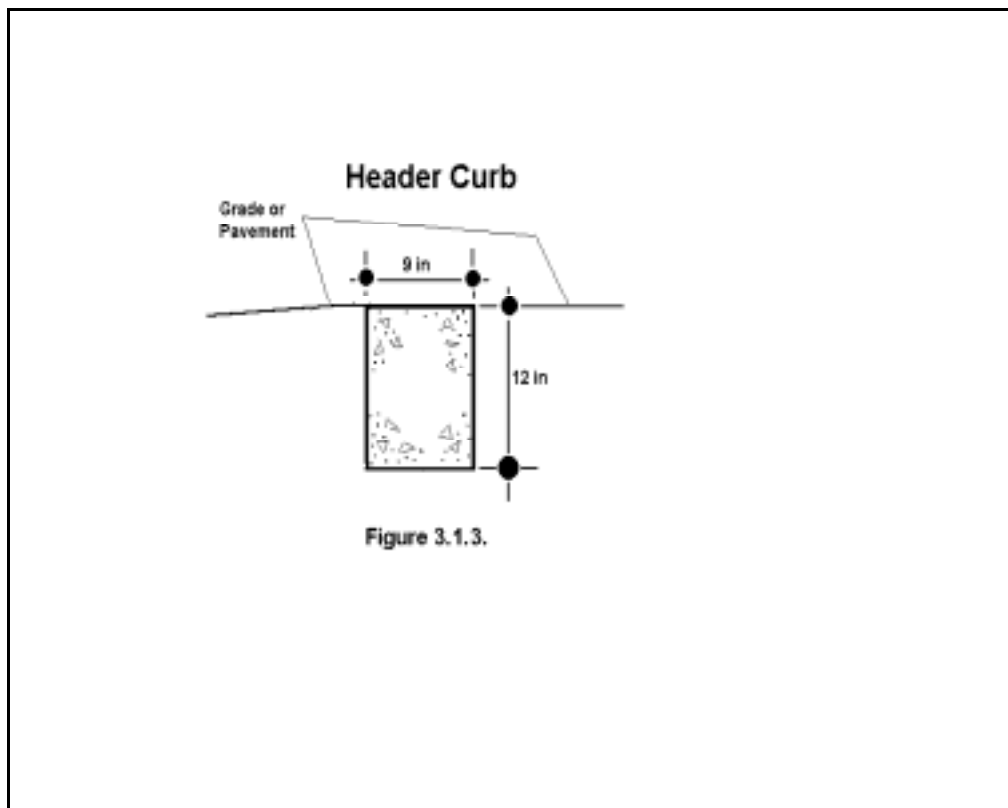


Figure 3.1.1.

**Figure 3.2. Mountable Curb.****Figure 3.1.2.**

3.1.2.1.3. Header curbs (Figure 3.3.) do not restrict access off the shoulder of pavements. Use this type of curb for roads outside of cantonment areas to preserve road shoulders from erosion, to define boundaries, and for water channels where two different pavement sections abutt. This curb will be used to provide a straight edge but not alter or impede drainage flow. Where header curbs are used, the ground surface should be sloped away from the top outside edge of the curb.

**Figure 3.3. Header Curb.**



### 3.1.3. Painting.

#### 3.1.3.1. Avoid painting curbs.

## 3.2. Parking Areas:

### 3.2.1. Design.

3.2.1.1. Parking areas should reinforce the experience of arrival at a pedestrian place. A landscaped transition area between the parking area and the road or facility should also be provided. Trees are acceptable, as is low maintenance xeriscaping. Avoid high maintenance landscaping in these transition zones. Consider the relation between the facility and the road. Create parking areas that will serve two or more facilities whenever possible.

3.2.1.2. Parking areas should be as unobtrusive as possible while providing safe and convenient parking for users. Parking lots should not be allowed to become long-term storage areas for vehicles. Do-it-yourself maintenance is authorized only in Services auto hobby shops and is prohibited in parking lots and other areas.

3.2.1.3. Off-street parking areas are preferred. On-street perpendicular parking spaces are discouraged.

### 3.2.2. Curbs at Parking Areas.

3.2.2.1. All parking lots will have perimeter curbing of the barrier type. Parking blocks are strongly discouraged since they are difficult to maintain and “lock-in” specific parking arrangement/layout; however, they are sometimes necessary in existing lots to prevent bumper overhang at sidewalks. Design new parking lots to allow for bumper overhang without parking blocks. Parking on turf, unimproved grounds, or landscaped areas is prohibited except by service vehicles. Provide curb cuts for handicapped access as necessary.

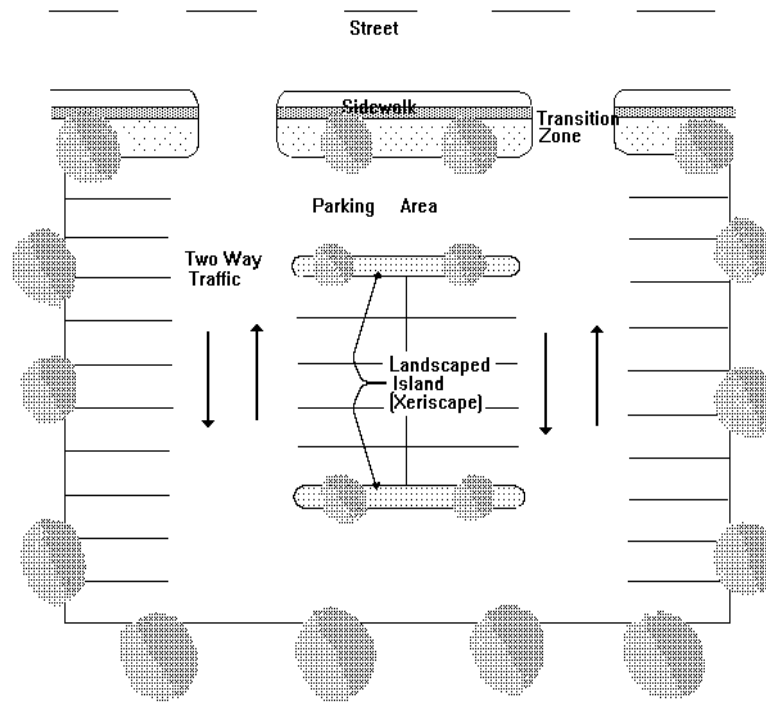
### 3.2.3. Parking for the Disabled.

3.2.3.1. Provide parking for the disabled in accordance with Federal Accessibility Standards for quantity and dimension. Provide the international symbol (white graphic on blue field) at each handicapped parking space.

### 3.2.4. Parking Islands.

3.2.4.1. Large parking areas should have islands to define parking areas. It is recommended that islands in parking lots be landscaped with plants or trees. Where plants are used, low maintenance plants (xeriscaping) are preferred. If island areas do not use live plants, gravel, pavers or other decorative treatment should be used. All parking lots will be striped with white stripes to define parking spaces. Figure 3.4. provides a schematic diagram of a typical parking lot layout.

Figure 3.4. Parking Lot Layout.



Typical Parking Lot Layout

Figure 3.2

### 3.2.5. Orientation of Parking Spaces.

3.2.5.1. 90 degree parking with two-way circulation is preferred for all parking lots since it requires the least land for a given number of vehicles and avoids confusion for motorists.

### 3.2.6. Access to Service Areas.

3.2.6.1. Provide access to service area and dumpsters through parking areas when appropriate. Keep this access as distant from the main entrance of the facility as possible. Separated service drives are encouraged.

### 3.2.7. Area Screening.

3.2.7.1. Open storage lots should have visual screening.

## 3.3. Sidewalks And Walkways:

### 3.3.1. Design.

3.3.1.1. Sidewalks and walkways should be placed to facilitate pedestrian traffic between facilities, prevent erosion, and enhance installation appearance. Normally, sidewalks should be of concrete. Asphalt sidewalks are strongly discouraged because they allow tar to be tracked into facilities on hot days. Sidewalks should be a minimum of 48 inches wide. Wider sidewalks are recommended where pedestrian traffic volume warrants. A five foot width is more appropriate where two-abreast walking is likely to occur.

3.3.1.2. Eliminate the narrow planting strips between sidewalks and the curb if on-street parking is permitted. For safety reasons, separate sidewalks from high-traffic roadways by at least 6 feet.

3.3.1.3. Use paving brick or stone walkways only to emphasize high profile facilities or to achieve some special effect. Use these types of walks sparingly because they are traditionally more expensive and require more maintenance than concrete sidewalks.

3.3.1.4. Ensure Military Family Housing areas have well developed sidewalk systems with a sidewalk on at least one side of every residential street. Sidewalks on both sides of residential streets are preferred.

3.3.1.5. Avoid planting trees or shrubs too close to sidewalks. As these plants mature, their root systems can damage or destroy sidewalks, and mature plants may obstruct the sidewalk without extensive pruning and plant maintenance.

3.3.1.6. Do not obstruct sidewalks and walkways by placing signs, plants, outdoor furniture, and utility equipment and poles too close. These features can create safety hazards for pedestrians.

## 3.4. Streets And Pavements:

### 3.4.1. Layout.

3.4.1.1. Lay out all roads and streets parallel to contours whenever possible to reduce erosion, visual impact, and grades. Preserve natural features, such as rock outcroppings, natural drainage patterns, and vegetation whenever possible when siting new roads or streets.

### 3.4.2. Hierarchy.



3.4.2.1. Develop roads and streets in a three tier hierarchy whenever possible. The three tiers are primary, secondary and tertiary. Develop each for the appropriate function.

3.4.2.1.1. Primary roads and streets connect main installation components such as the main cantonment area, community center, and flightline areas. These are the highest volume streets on an installation.

3.4.2.1.2. Secondary roads and streets connect installation components to one another and to support facilities, such as cantonment areas to industrial areas, or commercial areas to housing areas.

3.4.2.1.3. Tertiary roads and streets are normally unpaved access roads or residential streets in housing areas. Consolidate existing access roads and streets to minimize installation impacts whenever possible. Careful consideration should be given to installing “speed bumps” or other speed control devices on tertiary streets in housing areas. Installation Commanders have authority to install “speed bumps” if local conditions warrant.

#### 3.4.3. Intersections.

3.4.3.1. Create and maintain unobstructed lines of sight at intersections beginning 45 feet from each intersection corner. This area forms a triangle which must be clear from 2 to 6 feet in height. Provide intersections with appropriate radii based on the type of road or street and vehicle.

#### 3.4.4. Markings.

3.4.4.1. All road markings shall be painted or tape striping. Use low lead coatings for traffic markings. Do not use solid lines where curbing delineates road edges.

3.4.4.2. Use a 4 inch wide, single white stripe to mark parking spaces. Use parallel 24 inch wide, reflective white stripes to denote crosswalks. Place the crosswalk stripes parallel to the roadway. Avoid yellow painted stripes.

#### 3.4.5. Utility Cuts.

3.4.5.1. Avoid utility or other cuts in pavement. Whenever possible, use tunneling technologies to go under pavements with conduits or piping. Place extra utility line conduits during road or street construction or prior to repaving to provide capacity for future growth.

### 3.5. Installation Entry Gates:

#### 3.5.1. Layout.

3.5.1.1. Particular attention must be paid to the streets and pavements at the installation entry gates to assure adequate security, safety and control of visitors. See Figure 3.3. for a diagram of an “optimal” main gate complex incorporating all of the desired safety and security features.

3.5.1.2. The main gate complex should have a minimum of dual traffic lanes in each direction to facilitate high traffic volumes during peak periods. Lane width or spacing should permit safety for security personnel standing between lanes. The guard house should be located on a traffic island located between the entry and departure traffic lanes.

3.5.1.3. Pull-offs should be provided for visitors and delivery trucks requiring on-installation passes to avoid blocking traffic lanes. Trucks should have a separate pull-off to segregate them from automobile traffic and to accommodate their large size. Passenger cars should be directed to

the adjacent visitor's reception center to obtain passes for installation entry through a one-way system of roadways to maintain positive vehicle control.

3.5.1.4. Vehicle access lanes should be provided in front and behind the guard house to allow small vehicles to make a U-turn or to cross over from one traffic lane to another under the positive control of the gate guard.

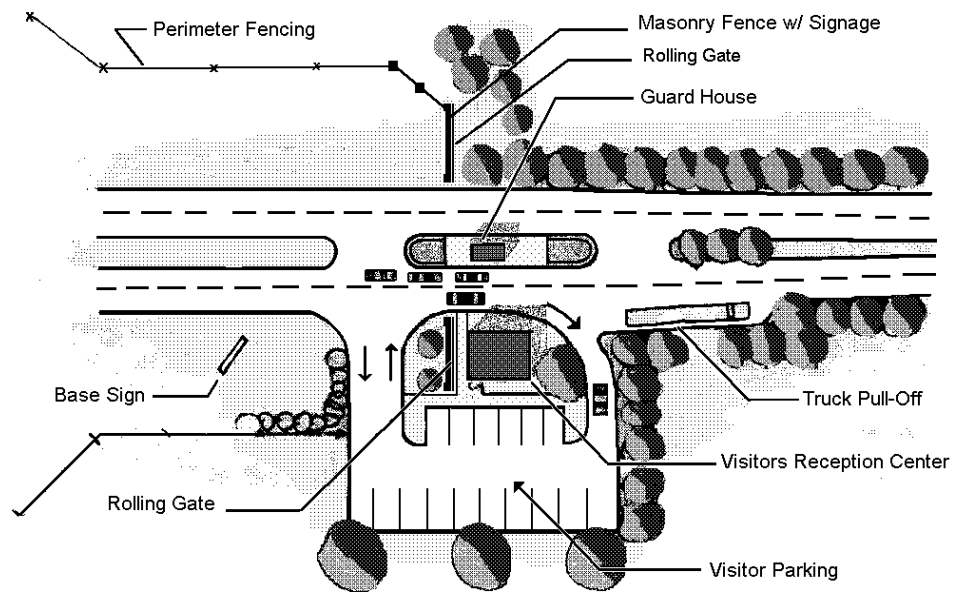
#### 3.5.2. Barricades.

3.5.2.1. Provide appropriate barricades around the guard house at each gate to prevent errant vehicles from crashing into the guardhouse and injuring the guard. The barricades should be integrated into the facility design and should be disguised as planters, decorative walls, or sign mounts. Care must be taken to not obstruct the field of view of the guard in the guardhouse.

### 3.6. Gates:

3.6.1. Each gate must have a positive means of securing the installation perimeter. Rolling gates are recommended, especially at the main gate, rather than swinging gates. Where snow and ice buildup occur, a cantilevered, sliding gate may be more practical. Other barricade devices may be appropriate for installation specific security requirements.

3.6.2. Gate mechanisms should be discreetly concealed from all directions using decorative walls or landscaping. This concealment feature should be incorporated into the design of the gate facilities.

**Figure 3.5. Main Entrance Gate with Visitors Reception Center.**

Main Entrance Gate with Visitors Reception Center

## Chapter 4

### LANDSCAPE STANDARDS

#### 4.1. Landscape Plan.

##### 4.1.1. General.

4.1.1.1. Landscape architecture is the art and science of designing exterior areas to improve visual appeal and functionality. It is one of the most effective means of improving the appearance and unity of an installation. Quality landscape architecture design and implementation also improves the quality of life for our people and visitors. Each installation should develop a Landscape Plan consistent with the installation's Comprehensive Plan. The plan should include the landscape elements of vegetation, land forms, water features, pavement and walkway materials, site amenities, and lighting to maintain consistency throughout the installation. These elements can then be used to address specific site concerns such as buildings, parking, streets, pedestrian and bicycle movement, plazas and courtyards, open space and natural areas, accommodation of local wildlife needs (especially for endangered or threatened species), and handicapped accessibility. AFSPC units tenant on another MAJCOM/DoD installation will adhere to the host unit's FEP.

4.1.1.2. Landscaping should be included in the design of any project. Project should not be considered complete until the entire landscape plan, both plant materials and site amenities, are installed.

##### 4.1.2. Plan Components.

4.1.2.1. The Landscape Plan must include a plant list that identifies the types and species of plants that are appropriate to local conditions. The plan must provide for development of the total built-up environment of the installation. Careful planning and design are as essential for landscaping as they are for building design to assure the right balance is maintained and the desired environment is created. The plan should address considerations and constraints for both developed and undeveloped areas on our installations to create and successfully manage the natural environment. A complete landscape plan is required before installation of any new landscaping. Consult local experts and installation grounds maintenance to develop planting specifications for the local area.

##### 4.1.3. Assistance and Guidance.

4.1.3.1. The services of a professional landscape architect should be acquired whenever possible, preferably through an open-end A-E contract, to help develop landscape plans for the installation and site plans for individual areas on an installation where landscaping is being modified.

4.1.3.2. Landscape design guidance is provided in the HQ AFCEE *USAF Landscape Design Guide*.

##### 4.1.4. Plant Uses.

4.1.4.1. Use vegetation to provide shade, minimize glare, and deflect undesirable winds for most CONUS installations. Use deciduous trees at the south and southwest sides of a facility to provide desirable summer shade and allow solar gain during the winter. Use evergreens to control winds and provide year-round screening.

4.1.4.2. Plant materials are preferable to man-made fencing unless security is required. Plants “soften” the area and divert the eye to the textures, colors, and variety of shapes of the trees and shrubs. Plants are especially suitable for screening electrical transformers, etc., where safety dictates that all surrounding metal must be set back a minimum of 8 feet.

4.1.4.3. Preserve the existing landscape whenever possible. Use natural forms and features in landscape planning. Minimize irrigated, high maintenance areas and encourage natural vegetation whenever possible.

#### 4.1.5. Formal Planting.

4.1.5.1. The degree of formality of the planting scheme should reflect that of the accompanying architecture, plaza, or courtyard.

### 4.2. Trees:

#### 4.2.1. General.

4.2.1.1. Trees are the focal point of all landscaping efforts. Select trees appropriate to the local climate to minimize maintenance, enhance durability, and provide the greatest longevity. Avoid trees that drop fruit, sap or seeds. Use long-lived and disease-resistant species.

4.2.1.2. Use small trees in plazas and courtyards to provide enclosure or screening. Use medium trees near buildings, parade grounds and pathways. Use large trees near streets, parking lots, and large open space. High branching trees are recommended near parking and streets to avoid visual hinderance.

#### 4.2.2. Planting.

4.2.2.1. Avoid planting trees too close to paved surfaces and buildings. Anticipate the growth, root structure and mature size of trees (both diameter and height) when selecting a plant site. Avoid planting trees where they will interfere with the installation infrastructure, such as sewer lines and electrical power distribution systems, as they grow and mature. Remove trees that are too close to structures or that interfere with infrastructure components.

4.2.2.2. Avoid planting trees in rows except to accentuate some feature in a formal way; i.e., a straight-line, major boulevard. Natural clusters and groves of trees are preferred.

4.2.2.3. Use a 5 gallon minimum size for shrubs, a 2 1/2 inch caliper minimum for trees, and a 1 gallon minimum for groundcovers. Carefully install plants to their proper depth and remove all burlap, wire or plastic.

#### 4.2.3. Care.

4.2.3.1. Irrigate or hand water new trees regularly for the first two years to ensure establishment of the root system.

4.2.3.2. Avoid major pruning of trees in natural and park areas unless required for safety, the health of the tree, or in highly visible locations. Trees in courtyards and in prominent locations should be pruned by skilled personnel to produce dense growth and control heights.

#### 4.2.4. Mowing Strips.

4.2.4.1. Provide a mowing strip around trees and other plant groupings to prevent damage from grounds maintenance equipment. Mulch trees within the mowing strip. Size the mowing strip to allow for tree growth and to accommodate a mature tree.

#### **4.3. Shrubs:**

##### **4.3.1. Selection.**

4.3.1.1. Use low maintenance shrubs with four season appeal at building foundations, sign bases, and at monuments, memorials, and other static displays.

4.3.1.2. Use plant materials with dense surface coverage to control erosion from wind and water.

#### **4.4. Xeriscaping:**

##### **4.4.1. General.**

4.4.1.1. Xeriscaping is the use of drought resistant plant and inert materials for landscaping. Where no plant materials can be supported, boulders can be substituted for shrubs, gravel blankets can be used instead of grass, and pebbles used for groundcover. This kind of arid landscaping can be used effectively in dry climates or where irrigation is not practical or feasible. Xeriscaping can significantly reduce grounds maintenance costs if used properly.

4.4.1.2. Although xeriscape suggests utilization of indigenous materials, there are numerous plants which are drought hardy yet provide a lush, ornamental look. The palette varies dependent upon geographic location. In locations where water is plentiful, the xeriscape concept may be inappropriate.

4.4.1.3. Define installation standards for the type of boulders, gravel, and pebbles to be used. Do not mix incongruous materials, such as lava rock and river run rocks. Define one coordinated set of materials as the installation standard to maintain unity throughout the installation and minimize maintenance and materials stockpiles.

##### **4.4.2. Planning.**

4.4.2.1. Xeriscaping requires careful planning. Use guidelines from local resources, such as state and municipal agencies to assist in creating the correct planning parameters for the installation climate and topography. Use of professional landscape architects is recommended wherever possible.

4.4.2.2. When employing xeriscape techniques, be careful not to create large monotonous areas with no distinguishing features such as large expanses of rock beds. Use drought tolerant plants, berms, and boulders to provide visual relief in these areas.

#### **4.5. Berms:**

##### **4.5.1. General.**

4.5.1.1. Use berms to elevate plantings and increase screening effectiveness. Design berms with slopes no greater than 4:1 that blend into the surrounding topography. Where trees or large shrubs are to be planted on the berm, the top should be at least 20 feet wide to provide adequate area for root growth. In long expanses, the top should undulate to avoid visual monotony.

## Chapter 5

### EXTERIOR SIGN STANDARDS

#### 5.1. General:

##### 5.1.1. Applicability.

5.1.1.1. Concise, orderly, and visually pleasant signage is a critical design element which creates an ongoing “dialogue” with its users. It directs traffic, identifies facilities, and provides warnings, information, and direction. The signage must respond to functional requirements and signage hierarchy. Signage must be of consistent materials and colors. It must convey concise messages to communicate intent clearly, and be a unifying element for the installation. AFSPC units tenant on another MAJCOM/DoD installation will adhere to the host command exterior sign policy.

5.1.1.2. Signage is one element in the built environment which should identify AFSPC installations as part of a larger whole, the United States Air Force. Common signage systems can visually communicate this continuity as effectively as building or landscape design. For these reasons, AFSPC accepts AFP 88-40, *Sign Standards*, as the standard with exceptions and additions as noted in this chapter. The standards which differ from AFP 88-40 are intended to meet the goals of AFP 88-40 while addressing conditions unique to AFSPC.

5.1.1.3. Wing Commanders are delegated waiver approval authority for the AFSPC standards listed in this handbook.

5.1.1.4. Signage is a visible statement about the pride and professionalism of an installation. Each installation must ensure that signs are well designed, maintained, and properly located. Further, the number of signs must be minimized. Rigorously question the need for each and every sign before it is placed on the installation.

5.1.1.5. When applying these standards, the primary objective is to reduce the number of signs on the installation and eliminate the visual clutter that results from over-signing. No sign should be erected unless the information it provides is absolutely necessary. The location, size, height, color, wording, and all other characteristics of every existing sign must be evaluated for this purpose.

5.1.1.6. Eliminate superfluous signs. Do not use plastic signs with individual changeable letters (often referred to as “marquee” type signs) or homemade plywood signs. Stenciled signs and those done with spray cans are also unacceptable. Electronic message signs located near the main entrances are preferred to a multitude of signs with temporary messages.

5.1.1.7. Installations with existing signs which do not conform to these standards will transition their signs as they need replacement. The transition to new signs should be done as part of normal sign maintenance due to deterioration or change of text and not as a wholesale replacement effort.

5.1.1.8. Units of other Commands tenant on AFSPC installations will have exterior signs conforming to AFSPC standards.

##### 5.1.2. Characteristics.

5.1.2.1. The color, style, and mounting of signs must be consistent throughout the installation. Exterior signs will have a standard installation format, color, and size. Brown background with white letters are the AFSPC standard for exterior signs. The brown background and white letter-

ing standard will apply to Type A1, A2, A3, B1, B2, B3, B4, B5, C1, C2, C3, C4, C5, D1, and D2 signs as defined in AFP 88-40. To maintain consistency, the back of signs shall be painted or coated to match the brown color on the face of the sign.

5.1.2.2. All exterior signs except the informational type should be readable both day and night. Illuminate exterior signs only when reflective letters do not provide adequate legibility during darkness or when special emphasis is needed (such as the main gate).

## **5.2. Sign Master Plan:**

### **5.2.1. Components.**

5.2.1.1. The Installation Commander is responsible for the signage program. Each installation should prepare a Sign Master Plan, which includes the location and content of every existing and proposed exterior sign on the installation. The plan must include both a site plan and a sign schedule. It should also define the approved materials and finishes for mounting, posts, foundations, etc., to be used for each type of sign. The Sign Master Plan should be a component element of the installation FEP.

5.2.1.1.1. To develop a Sign Master Plan, use a current installation layout map, showing all streets, structures and other major features. Identify and number each sign on the site plan to establish the sign location.

5.2.1.1.2. Prepare a schedule of all existing and proposed signs. Indicate the sign number, message, sign type, and a reference to the applicable structural installation drawing. It is recommended that signs be categorized in the sign schedule into the following categories as defined in AFP 88-40: Exterior Identification Signs; Direction Signs; Regulatory Signs; Motivation Signs; and, Information Signs.

### **5.2.2. Civil Engineering Responsibilities.**

5.2.2.1. The Base Civil Engineer is responsible for developing, implementing, and maintaining the Sign Master Plan as well as eliminating inappropriate or unnecessary signs.

5.2.2.2. The Sign Master Plan cannot be prepared without actually touring the installation. A location which looks clear on the plan, may in fact, be hidden by vegetation or other obstacles.

5.2.2.3. Each existing sign on every installation must be reviewed every two years to verify need and condition. Extraneous and unauthorized signs are to be removed.

## **5.3. Types Of Signs:**

### **5.3.1. Identification Signs.**

#### **5.3.1.1. Installation Identification (Entrance) Signs.**

5.3.1.1.1. Installation identification signs introduce the installation to all visitors. Their organization, design, quality, and maintenance create a first impression that sets the tone for the visitor's reaction to the installation.

5.3.1.1.2. Type A1 and A2 installation entrance signs shall be on a raised base constructed of materials consistent with the local and installation architectural style. No text or graphics are to be placed on the base of the sign. To create a professional, command-wide image, AFSPC



installations must exhibit consistency in the design of type A1 and A2 entrance signs. While the structure holding the sign may vary to conform to local materials, conditions, and predominant installation architectural style, the sign face itself must conform to the standards in AFP 88-40 unless approved otherwise by waiver.

5.3.1.1.3. The sign face shall show the following information only:

UNITED STATES AIR FORCE

Installation Name

Command Shield

Gate Name, if appropriate

**NOTE:**

The Command name should be used only if the Air Force Seal is used. The Command Shield is preferred for use in AFSPC.

5.3.1.1.3.1. No unit names, unit mottos, or names and titles of individuals are permitted.

5.3.1.1.4. Graphics should normally appear only on the side of the sign facing incoming traffic, but the backside should present an acceptable appearance.

5.3.1.1.5. Low maintenance landscaping and ground mounted lighting is required. 5.3.1.1.6. Installation entrance signs will be replaced by attrition only and will not be changed if the physical condition and message of the existing sign is satisfactory.

5.3.1.1.6. Use the Type A3 Installation Entry sign to identify secondary entrances with limited public access. It is to be mounted on a sign structure that also holds the installation warning sign.

5.3.1.2. Military Facility Signs.

5.3.1.2.1. Military facility signs consist of three types: building name, building number, and building address. This section covers facility signs in general, specific guidance for each type is provided in AFP 88-40.

5.3.1.2.2. Locate freestanding facility signs near the main entrance and make sure they can be read from the street. It may be necessary to use more than one sign when there are widely separated main entrances. In all cases, signs must be kept to a minimum.

5.3.1.2.3. Some existing buildings may have signs engraved into the facade of a building. New engraved signs on existing or new buildings should be avoided.

5.3.1.2.4. Facility signs should not be replaced unless required for normal signage maintenance which includes damaged, faded, or change of text to sign.

5.3.1.2.5. Unit awards are not authorized for display on facility signs. Units should recognize receipt of these awards in appropriate displays within their facilities.

5.3.1.2.6. Unit nicknames, unit mottoes, and names or titles of individuals are not authorized on facility signs.

5.3.1.2.7. There are several distinct styles of facility name signs: individual, raised letters attached to the building; base and post mounted free-standing signs (stand-alone); and signs attached to the building. For consistency, the same style should be used throughout the installation, except that individual, raised letters may be used on an installation with the other styles. A single facility should not typically have both a wall mounted sign and raised letters attached to the building; however, both may be practical in some instances. Using raised letters and a free-standing sign should be avoided unless the building is widely separated from the main access roads.

5.3.1.2.8. Individual numbers mounted or painted directly on a building are to be avoided.

5.3.1.2.9. Building name signs which are attached to the building or that are stand-alone may provide the functional or organizational name, but not both. Generally, only one organizational name will be on a sign.

5.3.1.2.10. If a building houses more than one organization, the sign should normally include only the major tenant. If there is no clear major tenant, the names of two or three co-equal organizations may be included on the sign.

5.3.1.2.11. In some instances, the names of high priority units, or those destinations that most often sought by people who are new to the installation, should be included on the building sign.

5.3.1.2.12. If more than three co-equal organizations wish to be identified, and the order of preference cannot be agreed to, then a general designation, such as Base Administration, should be used.

5.3.1.2.13. Approved Facility Signs.

5.3.1.2.13.1. Type B1: This sign type is used to identify the highest level flag bearing (MAJCOM or numbered Air Force) Headquarters on an installation. The emblem must be the MAJCOM or numbered Air Force shield: 12 in by 12 in for base mount, 8 in by 8 in for post mount, full color.

5.3.1.2.13.2. Type B2: This sign type is used to identify a lower level flag bearing (Wing Level) Headquarters on an installation. The emblem will be the Wing shield mounted in the upper left corner of the sign. All emblems will be 6 in by 6 in, full color.

5.3.1.2.13.3. Type B3: This sign type is used to identify Squadron Level Headquarters, Squadron components, detachments, and non-military equivalents. (NOTE: Individual raised letters mounted on the building are authorized in lieu of Types B1, B2, and B3 signs.) No emblem should be used for this type of sign.

5.3.1.2.13.4. Type B4: This sign type is used to identify all other buildings or organizations. Emblems are not authorized for B4 signs on AFSPC.

5.3.1.2.14. Facility Number Signs.

5.3.1.2.14.1. Type B5: This is a facility number sign, which is required on all facilities. Facility numbers painted directly on the building are unacceptable. Although building shapes and other irregularities occasionally require variations, facility numbers should normally be on the right corner of the front facade of every permanent building. Only one facility number sign needs to be visible from a single vantage point. Lettering and sign

color should be white on standard brown. In some instances it may be necessary to deviate from the color standard to ensure visibility. Avoid bold accent colors.

#### 5.3.1.2.15. Building address signs.

5.3.1.2.15.1. Every occupied facility will have a building address sign containing the address number consistent with US Postal Service protocols. The building address sign shall contain only the address number (not the street name) and will not be combined with the facility name or facility number sign. The building address sign should normally be attached to the building near the entrance where mail may be delivered. Lettering and sign color should be consistent with other signage on the installation where possible. As building configurations and other conditions vary widely, the location, size, color, and other characteristics of address signs must be determined on a case-by-case basis. It may be necessary to deviate from the color standard to ensure visibility. Avoid bold accent colors. Include building address signs in the Sign Master Plan.

5.3.1.2.15.2. The Installation Commander may determine if facility numbers may be omitted from sign types B1, B2, B3 and B4 if building addresses are the primary means of locating organizations or buildings. If building numbers are omitted from these type signs, they must be omitted from all of those type signs on the installation.

#### 5.3.1.3. Community Identification Signs.

5.3.1.3.1. Third party commercial signing must be integrated with the installation signage system. It should not be garish or obtrusive.

5.3.1.3.2. Sign standards should be included in the approval package for all commercial enterprises on the installation.

5.3.1.3.3. Sale and other special event signs taped to or painted on windows, banners attached to building exteriors, and other temporary type signage is unacceptable.

5.3.1.3.4. Backlighting and neon signing is discouraged on all AFSPC installations.

#### 5.3.2. Destination Signs.

5.3.2.1. There are a great many potential destinations on any AF installation--too many to list on direction signs. At the same time effective direction signs can help to make the installation easier to use and can avoid confusion and disorientation. Used together with proper street identification, signing and effective installation maps, they form the key to visitor orientation on the installation.

5.3.2.2. The content and location of all direction signs must be developed in the installation Sign Master Plan to create a logical system to direct visitors from the point of entry, through every intersection to their final destinations. Be concise and to the point. Use the guidance provided in AFP 88-40 for direction sign placement, mounting, etc.

5.3.2.3. Since not every destination can be listed, priorities must be established for listing destinations. Give the highest priority to those destinations that are most often sought by people who are new to the installation. Consequently, direction signs should lead to activities likely to have a great deal of first time traffic such as the Commissary, Base Exchange, Hospital, Billeting Office, etc.

5.3.2.4. Maps should indicate the same names that are used on direction signs and the security police should give directions consistent with the sign and map terminology.

5.3.2.5. No more than four directions should appear on a single direction sign. If there is a need to show more than four directions, a second sign may be used, but not more than two direction signs may be used in such a situation. Group those destinations in the same direction.

5.3.2.6. All graphics: the message, arrows, borders, and the sign background shall be of reflective materials to facilitate nighttime visibility.

5.3.2.7. Graphics generally should appear on only one side of the sign because the sign will be placed in advance of an intersection, however two-sided signs may be used where appropriate. Check the locations for height and obstructions.

5.3.2.8. Do not place directional signs near organizational or facility identification signs unless absolutely necessary.

5.3.2.9. The following two types of direction signs are approved for use on AFSPC installations.

5.3.2.9.1. Type D1: This type sign shall be used at roadways with speed limits in excess of 25 miles per hour.

5.3.2.9.2. Type D2: This type sign shall be used at roadways with speed limits of 25 miles per hour or less, at parking lots, and along major pedestrian routes where confusion might otherwise exist.

5.3.2.10. Street Signs.

5.3.2.10.1. There will be one street name sign for each street at each intersection.

5.3.2.10.2. Signs will be mounted not more than 15 feet from the cross-street curb line, and the bottom of the sign should be not less than 7 feet above the ground. The locations must be consistent throughout the installation. Locate signs away from trees or other obstructions that may block views.

5.3.2.10.3. A full-color Air Force Space Command emblem is required at the left of the lettering on all street signs.

5.3.2.10.4. Signs will have a standard width of 6 inches. The length will be determined by the number of letters in the street name, though signs will not be longer than 30 inches. Lettering will be 4 inch upper case. For long street names, use narrow stroke widths to stay within the sign length.

5.3.2.10.5. Colors will be white letters on Standard Brown background. Lettering will be reflective for visibility during darkness.

5.3.2.10.6. Conventional abbreviations for street (ST), avenue (AVE), and boulevard (BLVD) are acceptable except for the street name itself.

5.3.2.10.7. Street signs shall be mounted on sign posts matching other posts on the installation. Signs mounted on light standards or other utility poles are unacceptable.

5.3.3. Regulation Signs.

5.3.3.1. Regulation signs have three sub-categories: Highway/Traffic, Installation Warning, and Parking Regulation. Signs in all three categories should be kept to a minimum number as they can be confusing and clutter the appearance of an installation.

5.3.3.1.1. Highway/Traffic Signs.

5.3.3.1.1.1. This handbook does not include Highway Traffic signs since this category is normally not regulated by the installation. Specific information can be found in the Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration.

5.3.3.1.2. Installation Warning Signs.

5.3.3.1.2.1. Legal requirements for AF installation warning signs, controlled area signs, and restricted area signs are contained in AFI 31-209, *The AF Resource Protection Program*, and AFI 31-101, *The AF Physical Security Program*.

5.3.3.1.2.2. Use the Air Force installation warning sign, controlled area sign, and restricted area signs at all personnel and vehicle entry points. Both the message and the background panel for all installation warning signs must be reflective. This type sign is often overused. Restrict the number and location of signs to those absolutely necessary to ensure security and control and as required by the applicable regulation. More signs only lead to confusion and clutter without improving security and control.

5.3.3.1.2.3. If working dog teams are used inside or around a posted area, the military working dog team notice should be placed directly below the sign panel.

5.3.3.1.2.4. Several other notices, such as a solicitation warning or photography prohibition, may be required by regulation at installation entry points. These notices should be placed directly below the installation warning sign or they may be combined on a separate sign structure. Such signs should only be erected in response to a need, not just "in case they may be needed someday".

5.3.3.1.2.5. The characteristics of these signs must be exactly as defined in AFP 88-40. Authorized types of warning signs for AFSPC are both the E1 and the E2 type signs.

5.3.3.1.3. Parking Regulation Signs.

5.3.3.1.3.1. Where possible, reserved parking should be designated by area, not individual spaces, as individual designations change frequently. Use flag-style signs or arrows within signs to bracket multiple reserved parking in order to avoid the visual clutter of numerous signs.

5.3.3.1.3.2. Where individual parking spaces are designated, the sign should be painted metal on low posts (approximately 4 feet high) beyond the curb or, less desirably, mechanically attached to the curb. Designations painted directly on the curb are unacceptable.

5.3.3.1.3.3. Design and color of parking signs should match other signs on the installation.

5.3.4. Motivation Signs.

5.3.4.1. Motivation signs have their place on AFSPC installations, but they must be carefully controlled to assure they do not become eyesores and nuisances. The biggest problem with motivational signs is their tendency to proliferate excessively, and to exhibit less than sufficient quality

standards in their effort to communicate. Electronic message signs can minimize the need for separate motivational signs.

5.3.4.2. Motivation signs must be included in the installation sign master plan. They must be minimized consistent with the object they are designed to promote.

5.3.4.3. Type F1, F2, and F3 motivation signs, as defined in AFP 88-40, are authorized on AFSPC installations.

5.3.4.3.1. Normally only two type F1 motivational signs are authorized on an installation. One should be at the air terminal entrance to the installation, and the other at the main road entrance. If there is not an air terminal entrance, only one type F1 motivational sign should be installed. Neither should be used if the installation has electronic message signs.

5.3.4.3.2. The type F1b changeable letter sign is not authorized except at the air terminal entrance if electronic message signs are not installed on the installation.

5.3.4.3.3. The type F3 unit morale sign, if used, must have a brown background when the unit emblem is displayed.

#### 5.3.5. Information Signs.

5.3.5.1. These signs are useful to provide educational information for visitors and installation personnel. Examples of information signs include signs explaining exhibits or monuments and signs giving directional guidance to pedestrians. Also included are signs at hazardous waste accumulation sites and points.

5.3.5.2. Illustrations on informational signs should conform to the standards provided in AFP 88-40. They should be installed only where necessary and must be consistent with the characteristics of other signs on the installation. They normally do not require lighting or reflective materials.

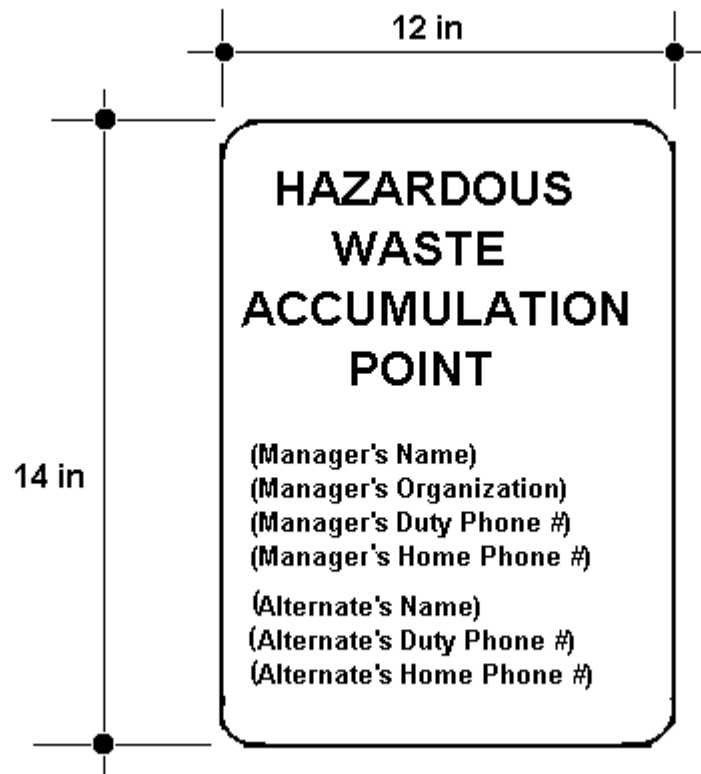
5.3.5.3. Monumental type informational signs are discouraged.

5.3.5.4. As informational signs are typically for the use of pedestrians, paths or walkways are usually necessary to the sign from a parking lot or main circulation route. These paths may be graveled, or hard surfaced depending on the usage and other conditions. Graveled paths should be edged to prevent the intrusion of vegetation and to define the desired walkway.

5.3.5.5. Landscaping in the vicinity of the sign and the exhibit(s) provides a finished appearance and professional setting.

5.3.5.6. Both G1 and G2 informational signs are appropriate on AFSPC installations. They must conform to the standards established in AFP 88-40, except that the graphics may be omitted if they provide no useful information. In some instances, the lettering (but not the sign) may also be larger.

5.3.5.7. One hazardous waste accumulation point sign is required at each accumulation site or point. It should be affixed to the gate or door of the accumulation enclosure. Characteristics of the sign are as shown in Figure 5.1. below. Note: the word "site" is to be used in lieu of "point," where appropriate.

**Figure 5.1. Waste Accumulation Point Sign.**

#### 5.3.6. Electronic Message Signs.

5.3.6.1. These signs are an effective way to reduce overall signage, keep information current, and more quickly respond to changing information requirements. Their use is authorized and encouraged at AFSPC installations. They should be located only at primary entrances to the installation and, where applicable, on or near the Base Operations building as the principal arrival point at the airfield. They should be permanently mounted on a base or on the Base Operations building.

5.3.6.2. Include landscaping and other amenities to provide a setting for the signs.

5.3.6.3. At entrances to the installation, these signs will normally be visually oriented toward the incoming traffic.

5.3.6.4. Signs should only provide information about events important to a large number of people on the installation.

5.3.6.5. Designate an organization to be responsible for the message content. Only authorized personnel should have access to the equipment which controls messages.

#### 5.3.7. Military Family Housing Signs.

5.3.7.1. The name and rank of family housing occupants will be displayed at or on all quarters. Due to various configurations of the quarters these signs cannot be located in the same place for all buildings, but must be visible from the main street and will be consistent for color, style, and mounting technique throughout the installation for the same type of buildings.

5.3.7.2. Name and rank signs may be painted on a suitable sign material or may be of the slip-in type. Any type of sign painted directly on the building is unacceptable.

5.3.7.3. Colors should match the other signs on the installation where possible, but may vary if necessary for contrast with the building on which they are mounted. They should not be of bright colors.

5.3.7.4. Address signs are to be posted on the buildings and must be visible from the street and consistent for the same type of buildings. Address signs will have only the address number, not the street name. Address signs and name/rank signs are not to be combined on the same sign.

5.3.7.5. Each building will also have a separate building number sign installed (not painted) on the building. As much as possible, these signs shall be located consistent with other building number signs on the installation.

5.3.7.6. Lettering, color, size, etc. for all three signs should be uniform for the same building.

#### **5.4. Signs For Historic Buildings:**

##### **5.4.1. Applicability.**

5.4.1.1. Historical buildings and buildings eligible for designation as historical buildings under AFR 126-7 will not have signs attached except for building numbers and address signs. Building number signs must be anchored only in masonry joints or other readily repairable features of the building to avoid permanently defacing the building. Building name signs will be free-standing.

5.4.1.2. In no case should signage engraved in the facade of a historical building be removed.

#### **5.5. Wall Mounted Signs:**

##### **5.5.1. General.**

5.5.1.1. When attaching logos (or any signs) to buildings, special care must be taken in selecting the method and location of anchorage to minimize defacing the building when it becomes necessary to change the logo or sign. The attachment hardware will be a nonferrous metal to prevent rust streaking the building finish.

5.5.1.2. Usage of the individual, raised letter style should be limited to major buildings which require sign changes very infrequently. This style sign should provide the functional name, not the organizational name, i.e. "Personnel", not XXst Personnel Squadron. Size the letters in proportion to the building or the installation standards.

5.5.1.3. Colors for raised letters should be brushed, clear aluminum, Standard Brown, or a contrast with the wall on which they are mounted. Colors for contrasting letters will be approved by the Installation Commander or his/her representative.

5.5.1.4. As the letters are applied directly to the surface of the wall rather than to a background panel, they must compete with the architectural details of the building. A minimum 12" capital letter is typical for one and two story administrative buildings. Larger letters are used on larger buildings. The helvetica typeface should be used, in either medium or regular, depending on the building characteristics.



5.5.1.5. Wall mounted signs should be illuminated only if the building is normally used during hours of darkness by individuals unfamiliar with the installation.

## **5.6. Typography, Graphics And Sign Placement:**

### **5.6.1. General.**

5.6.1.1. Graphics painted or mounted directly on buildings are not permitted. Graphics include building names and numbers, “racing stripes”, murals, slogans, shields, crests, and pictographs. Large size (supergraphic) facility signs are not acceptable.

5.6.1.2. All lettering and numbers will be helvetica regular or medium as specified in AFP 88-40. Lettering rules must strictly follow the guidance provided in AFP 88-40.

5.6.1.3. Good judgment is the key to deciding where the lines in a sign message should break. The lines should be balanced so that the sign does not look awkward. Usually, single ideas or names should appear on the same line.

5.6.1.4. As a rule, numbers should occur as numerals, unless otherwise specified in the authorized unit name.

5.6.1.5. Names should be spelled out in full whenever possible. If abbreviations are required, they must be official Air Force abbreviations.

## **5.7. Sign Mounting Details:**

### **5.7.1. General.**

5.7.1.1. Materials and installation should conform to AFP 88-40.

5.7.1.2. Anodized or factory treated and permanently colored aluminum tubing or square steel stock is preferred for facility sign posts. Ensure the selected material is used throughout the installation and is architecturally consistent with the standards set for the installation for style and color.

5.7.1.2.1. Posts for traffic control signs should be nongalvanized metal (if they are to be painted) or a vinyl sleeve over post if galvanized metal or tubular aluminum is used.

5.7.1.3. Signs other than those governed by the Manual on Uniform Traffic Control Devices (MUTCD), warning signs, and morale signs with specific graphics will be reflective sheeting engineer grade brown with white letters.

5.7.1.3.1. Reflectorized signs must conform to Federal Specification LS-300C and the MUTCD. The reflective sheet must be LS-300C, Type 1, Table III, Reflectivity II (high intensity encapsulated lens) for building numbers, regulatory, warning, street names, directional signs, and building identification signs.

5.7.1.3.2. LS-300C, Type 1, Table II, Reflectivity I (engineer grade) may be used for less critical signs, such as parking signs.

5.7.1.4. Aluminum or galvanized steel should be used for signs to reduce the possibility of rust.

5.7.1.4.1. Aluminum stock should be 12 gauge (.0808 inches) or thicker.

5.7.1.5. Posts and cross-members, mounting hardware, and exposed sign backs must be painted or factory coated to match the color of installation building architecture and local sign standards. Reflective sheet color will be engineer-grade brown on sign face.

5.7.1.6. Assure that all vertical sign posts are plumb and square with the sign face. All horizontal members are to be level and square with sign-faces. Signs should face oncoming traffic and be structurally capable of withstanding local wind conditions.

## **5.8. Emblems:**

### **5.8.1. General.**

5.8.1.1. Emblems may be attached to buildings; however, frequent changes in building occupancy and logo design cause changes which are expensive and can leave multiple fastener holes in the building finish. Therefore, the attachment of emblems to buildings should be minimized.

5.8.1.2. Buildings will normally have no more than two shields. Where multiple shields are used, the higher echelon shield will be on the left, when facing the sign.

5.8.1.3. All emblems and regalia shall be consistent with the AF Heraldry standard.

5.8.1.4. Shields will not be replaced just to conform to these standards. Replace shields only when the organizational unit changes, or when deteriorated or damaged.

5.8.1.5. If pictograph symbols are used on any sign, use the standard pictograph symbols shown in AFP 88-40.

## Chapter 6

### FACILITY EXTERIOR STANDARDS

#### 6.1. General:

##### 6.1.1. Elements.

6.1.1.1. Building exteriors are the basis for the most lasting impression of an installation. This impression results from the relationship between scale, massing, proportion, texture, color and many other elements. To achieve excellence, these elements and their interrelationship to new construction or renovation projects should be blended to enhance the facility's exterior appearance with the natural surroundings. For example, the right exterior color scheme can result in a dramatic improvement to not only the physical appearance of the facility but also to the surrounding area. It must also be understood that the appearance of a facility could be downgraded because of too many exterior elements in the vicinity. These elements should all be addressed in detail in the installation's Comprehensive Plan. AFSPC units tenant on another MAJCOM/DoD installation will adhere to the host command architectural standards and facility envelope policy.

#### 6.2. Roofs:

##### 6.2.1. Standard.

6.2.1.1. The AFSPC standard is to have all roofs sloped to provide positive drainage and to preclude rainwater or melting snow from ponding on roofs.

##### 6.2.2. Materials.

6.2.2.1. Roofs may be of many different types of materials, consistent with the installation architectural theme. Standing seam metal roofs are a cost effective roof system and are recommended where consistent with the architectural theme.

6.2.2.2. Avoid gravel roofs whenever possible since they are difficult to maintain, continually shed gravel, and are easily damaged when maintenance work is required on roofs or roof mounted systems. In many instances, however, gravel surfaced built-up roofs are the only feasible alternative. In these situations, minimize roof mounted equipment and install walking surfaces to access the equipment that must be roof mounted.

##### 6.2.3. Equipment.

6.2.3.1. Avoid roof mounted equipment whenever possible, but where required, equipment, appurtenances, penetrations, etc., must be screened, painted or otherwise concealed to blend in with or complement building architectural style and color schemes. No unpainted or mismatched objects should be visible.

#### 6.3. Doors And Windows:

##### 6.3.1. Glazing.

6.3.1.1. Windows should be a minimum of double glazed, and in extreme climates triple glazing may be cost effective. Factory applied tinting is acceptable, but should be limited to gray or neutral colors. After-market tinting is strongly discouraged because of the added maintenance burden it creates and because it is not sufficiently durable.

#### 6.3.2. Frames:

6.3.2.1. Window frames may be of steel, aluminum or wood. Factory finished aluminum is preferred. Anodized aluminum window frames reduce maintenance costs and are virtually maintenance free for the life of the window. Steel frames are discouraged because of the maintenance (painting) required with this window type.

#### 6.3.3. Doors.

6.3.3.1. Exterior doors in high use facilities must be durable and meet safety requirements. Access into high use facilities must be suitable for handicapped personnel.

### 6.4. Exterior Wall Finishes:

#### 6.4.1. General.

6.4.1.1. Exterior wall finishes should be consistent with the architectural style adopted for the installation, and as maintenance free as possible. Brick, exposed aggregate concrete panels, color impregnated stucco, exterior insulation systems such as "Dryvit," and in the correct application, concrete masonry block are acceptable type exterior systems. Whenever possible, use the appropriate integral color to achieve the best life cycle cost. Other maintenance free exterior building systems, such as factory finished metal panels, are also acceptable in the right application.

6.4.1.2. When constructing new facilities, minimize the amount of painted exterior wall and trim. Wherever possible, use prefinished systems for trim and appurtenances such as rain gutters and downspouts.

#### 6.4.2. Materials.

6.4.2.1. Concrete block is an acceptable exterior wall finish for side and back walls of facilities in industrial areas and storage warehouses, but it should be minimized in high traffic areas. Plain concrete masonry block is not acceptable as an exterior finish in high use areas and for facilities with a high customer service population. Depending on the architectural style of the installation, architectural concrete masonry block units, such as split face block, fluted face block, and shadow block may be effectively used as an exterior finish. When used, masonry units should be color impregnated to match the installation color standards and to avoid high painting and maintenance costs. Additionally, concrete masonry block should be sealed with an appropriate sealant to preclude water absorption or infiltration.

6.4.2.2. Wood is not recommended as an exterior wall finish material because of its high maintenance cost and susceptibility to decay.

#### 6.4.3. Paint.

6.4.3.1. Paint is and will remain the most commonly used exterior wall treatment. Exterior paint colors must be compatible with the surroundings and consistent with the installation architectural and color theme. Where paint is necessary for the exterior of a facility, use only no lead, no VOC/low VOC paints to avoid future pollution or hazardous material remediation problems. A maximum of three color schemes is sufficient.

6.4.3.2. Change colors only when existing surfaces need repainting. Ensure the correct paint color scheme is included in the recurring paint program.

6.4.3.3. If radomes require painting, white is the only acceptable color to minimize heat/solar absorption.

6.4.3.4. Exterior equipment (transformers, meters, air handling units) should be painted the same color as adjacent surfaces so they will blend in and become less visible and obtrusive. Dock bumpers, guard rails, bumper posts, and similar appurtenances should also be painted to blend with the surroundings, consistent with safety requirements, whenever possible.

**6.4.4. Paint Plan.**

6.4.4.1. Develop a Paint Plan for the installation, defining the installation and trim colors to be used on each facility. If possible, obtain professional help in selecting the exterior colors. Avoid large areas of bright color and colors which fade easily.

## Chapter 7

### INTERIOR FINISH STANDARDS

#### 7.1. Interior Design Objectives:

##### 7.1.1. General.

7.1.1.1. The impact of interior design on the well being and productivity of our people is extremely important as most of our time is spent indoors. Integration of engineering, architectural, and interior design considerations result in the creation of a “seamless” interior. The structural, electrical, and mechanical systems enhance the architectural and interior design features and vice versa. The combined elements of each discipline should create a fully integrated environment where the occupant loses sight of the “how” and “why” the facility works and simply enjoys being there.

##### 7.1.2. Philosophy.

7.1.2.1. Quality interior design reflects “understated excellence” and assures that facilities are attractive, environmentally safe, operationally efficient, and maintainable. The interior designer must strive for sound, economical, functional, and aesthetic design achievements. Well designed facilities satisfy the user’s needs, install pride in ownership, and promote productivity in the workplace. Standards for interior finishes and furnishings must be an integral part of the installation FEP.

##### 7.1.3. Function.

7.1.3.1. Functional interior design ensures that each aspect of the interior environment performs efficiently for the user. A good working relationship between the user and designer will help accomplish this goal. Each facility type presents unique functional requirements that will ultimately affect the selection of finish materials and furnishings. It is important for the designer to investigate all aspects of these requirements through the user.

##### 7.1.4. Cost Effectiveness.

7.1.4.1. All interior selections must reflect the best buy for the Air Force in terms of aesthetic value, maintenance characteristics and life-cycle costs. Inexpensive, short-term solutions do not necessarily produce cost savings over time.

##### 7.1.5. Durability.

7.1.5.1. Durable designs and finishes help facilities pass the “test of time.” The designer must be concerned with material durability and wear while considering budget restrictions and monetary resources. Selection of quality materials and products must also be appropriate to the function and level of use. Extra consideration must be given to products specified in heavy-use areas and specific functional areas.

##### 7.1.6. Maintainability.

7.1.6.1. The use of easily maintained finishes is critical. While certain finishes may provide excellent durability, the designer must give serious consideration to maintenance and the effort required to maintain the appeal of certain products. It is critical to be familiar with finishes that wear well with low maintenance requirements.

#### 7.1.7. Compatibility.

7.1.7.1. Each installation has its own architectural and environmental compatibility plans reflecting regional, environmental, and architectural considerations. The designer should be familiar with the installation's plans to achieve a unified sense of scale, tradition, and facilities excellence.

#### 7.1.8. Design.

7.1.8.1. Facilities must meet as many "human" needs at as many levels as possible, especially the need to feel good about one's surroundings. Working and living environments are increasingly within the control of those who design and build them. The design team's responsibility is to provide a facility which fosters productivity and job satisfaction. Well designed interiors can provide an environment that contributes to achievement at work and enhances pleasure and relaxation in recreational facilities.

#### 7.1.9. Creativity.

7.1.9.1. Budget constraints place increased importance on design creativity. Proper planning and research of innovative design features will help the designer provide quality facility interiors within restricted budgets.

#### 7.1.10. Flexibility.

7.1.10.1. Flexible designs are essential to meet the dynamic requirements of our mission. While the primary function of each facility must be the priority, the designer must keep in mind that functions evolve, and facilities may require future modifications. Rapid technological advancements often demand upgraded equipment, power and communications requirements.

#### 7.1.11. Timelessness.

7.1.11.1. The elements of pure design, including structural expression, suitability of materials, harmonious visual and tactile features, and classic furnishings will always remain the foundation of good design. Designers should avoid trendy or dated finishes and design features. Interiors should be creative but not extreme, reflect quality but not opulence, and be capable of being updated without requiring major changes to materials, spaces and functions.

### **7.2. Interior Design Approach:**

#### 7.2.1. General.

7.2.1.1. A professional Interior Designer, qualified by education, experience and often state registration, is concerned with space planning and the selection of furnishings and materials to fulfill the functional requirements of interior spaces. AFSPC expects architectural and engineering firms, the Naval Facilities Engineering Command, and the Army Corps of Engineers to use qualified professional Interior Designers. AFSPC encourages wing commanders to establish an interior design position on the base engineer staff to provide design and technical review expertise. All too often, poor interior design negates much of the effort and cost expended on a facility by the other design disciplines.

7.2.1.1.1. The Interior Designer begins to formulate solutions for a design only after they have a clear picture of the users requirements and the installation's FEP. The information can be accumulated through meetings with users and surveys conducted by the interior designer. As

much information as possible should be gathered at the onset of design to eliminate surprises at later stages of the design.

#### 7.2.2. Programming.

7.2.2.1. Military interior design projects are typically classified into the two categories shown below and are many times programmed differently depending on the type of project and past history. Refer to the AFCEE Interior Design Presentation Handbook for information on programming for interior design projects. There are two types of interior design packages and they both relate directly to the other. Funds for interior finishes and furnishings must be an integral part of the programming documents.

##### 7.2.2.1.1. Structural Interior Design (SID).

7.2.2.1.1.1. The process involves the selection and coordination of interior materials and finishes that are part of the building or are built-in permanent items. A SID is required for all projects to get a completed finished facility.

##### 7.2.2.1.2. Comprehensive Interior Design (CID).

7.2.2.1.2.1. This process involves designing, selecting, and developing interior materials, finishes, special effects, and furnishings for an integrated visual design theme (architectural and interior design). CID requirements, therefore, include structural interior design features. The furniture part of the package includes accessories, artwork, lamps, trash receptacles, chalk and tackboards, signs, window coverings, plants, chairs, desks, files, tables, etc. This process includes developing an environment for a totally compatible architectural and interior facility.

#### 7.2.3. Space Planning.

##### 7.2.3.1. Personal/Public Spaces.

7.2.3.1.1. Provide for the personalization of each user's space including display of personal items, within limits. Develop a clear definition between the public and private areas of a facility.

##### 7.2.3.2. Traffic Flow.

7.2.3.2.1. Traffic patterns must be arranged to allow for an orderly flow of operation. Provide a clear understanding of the horizontal and vertical circulation. Create major and minor spaces that will establish focus, attention, and orientation. The first dominant major space is the entrance to a facility which should be designed as a visual focal point that leads into the other major and minor spaces throughout the facility. Signage is a very critical element in the success of a working traffic pattern. Circulation paths should anticipate and accommodate the number of personnel in the facility.

##### 7.2.3.3. Functional Relationships.

7.2.3.3.1. Consider different groups of people and their working relationships. Identify and prioritize which employee/work groups need to be located adjacent to each other. Identify the relationships and interactions of individuals within a work group.

##### 7.2.3.4. Status And Function.



7.2.3.4.1. Identify special requirements for circulation, public/private space separation, VIP areas, informal gathering spaces (coffee bars, break rooms, and shared equipment space), and storage (filing, coats, supply, etc.). The occupant's rank and position will influence the square footage and selection of materials.

7.2.3.5. Equipment Usage.

7.2.3.5.1. Identify all equipment and its users within each facility or each area of the facility. Provide equipment sizes, electrical requirements, ventilation requirements and weight if heavy. Remember that almost all administrative spaces have computers and supporting equipment.

7.2.3.6. Efficient Use Of Space.

7.2.3.6.1. Maximize the use of all spaces for their functions.

7.2.3.7. Flexibility.

7.2.3.7.1. Recognize that future modifications and function changes may require adjustments within a space to accommodate staff size changes and new technology.

7.2.3.8. Aesthetics And Comfort.

7.2.3.8.1. Create an atmosphere that increases human comfort and efficiency in a pleasing way. Visual comfort as well as ergonomically comfortable furniture needs to be considered.

7.2.4. Architectural Design.

7.2.4.1. Codes And Regulations.

7.2.4.1.1. Applicable AF instructions, policies and pamphlets, as well as life safety, fire codes and local and federal regulations must be followed in all designs. Identify all applicable codes early in a project to minimize the need for reselections or rework. Be aware that codes apply to furnishings as well as finishes. Ensure that all designs meet the Uniform Federal Accessibility Codes. Most Air Force facilities now have to comply with the American Disability Act.

7.2.4.2. Location Influences.

7.2.4.2.1. There may be site specific factors which influence design solutions. It is the designer's responsibility to determine which factors need consideration and determine the best method of addressing each.

7.2.4.2.1.1. Architectural Compatibility with Existing Facilities. The local parameters determining a facility's exterior features will effect the size and type of windows, the ceiling heights, and to an extent, the materials carried into lobbies, foyers, and other internal spaces. The designer must work with the project architect to ensure the complete coordination of interior and exterior designs for the best interest of the user and function of the space. The interior and exterior should have recurring lines, shapes and color to create an overall impression of compatibility.

7.2.4.2.1.2. Historic Preservation Requirements. The National Historic Preservation Act requires federal agencies to consult with the State Historic Preservation Officer and Advisory Council on Historic Preservation regarding proposed changes to properties listed on or eligible for listing on the National Register of Historic Places. The Secretary of the

Interior Standards for the Treatment of Historic Properties provides guidelines for making sure that selections do not compromise a facility's historic integrity.

7.2.4.2.1.3. Cultural Beliefs and Customs. Many nationalities and religious groups attach significance to certain colors, patterns and materials. Some are considered sacred, good influences and prestigious, while others are considered taboo. For instance most Western cultures consider black the color of mourning. Some Middle Eastern groups wear head coverings of patterns significant to their nationality or religion. The designer must investigate any customs or cultural influences that might become protocol issues.

7.2.4.2.1.4. Current Mission. Each individual mission in AFSPC dictates certain design features and requires that our facilities address the unique tasks at hand. For example, sometimes windows are downsized or eliminated due to mission requirements. In these cases, designers need to emphasize other architectural elements and finishes to ensure a pleasant atmosphere for the users.

7.2.4.2.1.5. Availability of Materials and Resources. Some materials are not readily available or economically shipped to all locations. When designing a project for remote locations, consider cost, import/export rules, and availability before specifying a product.

7.2.4.2.1.6. Special Climatic and/or Maintenance Problems. The designer must take into account local climatic conditions when selecting materials and finishes. Special maintenance requirements should be identified for heavy snow or rain, very arid or humid climates, exposure to salt water, unusual soil conditions and sand, and high levels of sunshine.

7.2.4.2.1.7. Security Requirements. The user must provide information regarding any special security requirements that need to be included in the project and validate and provide information from the appropriate agency before design begins. When dealing with facilities that have special security needs, security clearances might have to be obtained for the designer and contractor completing the job.

7.2.4.2.1.8. Environmental Considerations. It is extremely important that Environmental Flight personnel be consulted during planning for any new construction or major renovation to ensure cultural and historic constraints are identified and considered. These personnel will help assure compliance with public laws, such as the Endangered Species Act, Historic Preservation Act, and with Presidential Directives dealing with pollution prevention, energy conservation, and others.

#### 7.2.4.3. Noise Levels.

7.2.4.3.1. Designers should consider both interior and exterior noise levels. Proper acoustical design depends on a careful ratio of reflective to absorptive surfaces so that excess reverberation and disturbing sound intensity levels can be eliminated. The type of noise disturbance and function of the space will determine the adequate level of sound control (white noise).

#### 7.2.4.4. Light.

7.2.4.4.1. Light and its affect on the environment are critical to the interior design of a space. The quality and placement of light sources are as important as light level in obtaining the functional and the aesthetic intent of the spatial designs. The designer should be aware of how the light source affects space perception, finishes, colors, and textures when making design deci-

sions. The function of the room or facility will influence the system type and amount of lighting required.

7.2.4.4.1.1. Numerous studies show that natural light positively affects both physical and mental health. In the work environment, people tend to have more job satisfaction if they have some contact with natural light through windows, skylights, and atriums. The designer must work with the project architect and the user to provide natural lighting in the most functional, cost effective manner. The interior designer must be involved in the selection of artificial light fixtures and sources to ensure:

Functional and aesthetic compatibility

Elimination of glare and color washout

Assurance of color integrity and finish materials

Flexibility in light control

Adequate supplemental light for maintenance where required

Proper lamping (bulbs) per fixture based on life cycle cost and replacement lamp availability

Compliance with life safety codes

#### 7.2.4.5. Proportion.

7.2.4.5.1. Room dimensions should be appropriate for the function. This is easier to accomplish in new facilities, although many things can be done in renovation projects to change the perceived size of the room or space without actually changing its dimensions. Some of these are discussed in the Color Concept section. The designer must create a balance between a space and the furnishings within it. The scale and mass of items placed within a space greatly affect how that space is perceived and its usability. The interior should be comfortable for the user without feeling crowded or underfurnished. Furnishings within a space must also relate to each other in a harmonious manner providing focus and balance for the viewer.

#### 7.2.5. Physical And Behavioral Requirements.

7.2.5.1. Human comfort and well being are priority considerations. The minimum physical requirements include appropriate levels of lighting, temperature, humidity and background noise. Some individual control of these elements is desirable. As with all aspects of design, the function of the space will determine the desirable amount of user control, depending on individual or group preference, the activities involved, and time spent within the space. The designer must address the behavioral needs of the occupants, including safety and security, privacy, personal space, and visual/directional orientation.

#### 7.2.6. Color Concept.

7.2.6.1. Color preference is very personal, and individual interpretation of color varies widely. However, the true properties of color are constant. The designer must have knowledge of these properties and their relationship to the functional, spatial and lighting aspects throughout the space. The designer and user must separate personal taste from professional design. The following general guidance directs attention to special areas of consideration when selecting color schemes for facilities:

#### 7.2.6.1.1. Timeless In Appeal.

7.2.6.1.1.1. Provide timeless color coordination that will be attractive to the majority of people.

7.2.6.1.1.2. Use neutral colors for permanent background finishes to support a variety of color schemes. For example, architectural materials such as ceramic tiles, stone, and bathroom fixtures.

7.2.6.1.1.3. Vary the intensity of color and create patterns to provide visual relief from the monotony of neutral colors.

7.2.6.1.1.4. Use accent colors for finishes that are subject to periodic change and to create interest in focal points. For example, carpet, wallcoverings, upholstery, and panel fabrics.

7.2.6.1.1.5. Provide small amounts of intense color in accessories and artwork for visual stimulation.

#### 7.2.6.2. Space Perception.

7.2.6.2.1. Use color to enhance the spatial qualities of an area.

7.2.6.2.1.1. Use warm colors to make a room seem smaller, more “human” in scale. Warm colors appear to advance toward the viewer.

7.2.6.2.1.2. Use cool colors to make a room seem larger and more spacious. Cool colors appear to recede from the viewer.

#### 7.2.6.3. Color Breaks.

7.2.6.3.1. Use fewer color breaks to make a room seem larger. Many color breaks may make a room look cluttered.

7.2.6.3.1.1. Paint doors (if applicable) and frames to match the walls in small rooms.

7.2.6.3.1.2. Avoid accent walls; closely coordinate wainscot and wall colors. Chair rails and wainscots tend to reduce the size of a space.

7.2.6.3.1.3. Blend wall color with colors found in the carpet.

#### 7.2.6.4. Pattern And Texture.

7.2.6.4.1. Use pattern and texture to stimulate interest and tie the color schemes together.

7.2.6.4.1.1. Consider the size of an item when deciding whether it should have a pattern and the size of a pattern to use.

7.2.6.4.1.2. Vary the surface texture to add visual appeal in a one-color scheme, especially when the introduction of a new color is not desirable.

7.2.6.4.1.3. Textures affect the way an object reflects light. Smooth, shiny surfaces reflect more light than rough, dull surfaces.

7.2.6.4.1.4. Glossy surfaces are perceived as cold, while softer, matte finishes are distinguished as warm.

#### 7.2.7. Material Selection.

7.2.7.1. Innovative and creative use of finishes and furnishings is always encouraged. New products are always being introduced to the market and often offer increased performance and aesthetics to the product line. Continuing education in product knowledge and research into product development are essential when making finish and furnishings selections. There are various factors that should be considered when making selections.

7.2.7.1.1. Research.

7.2.7.1.1.1. New product development should be investigated as well as availability and reliability of existing products and services. A check of user satisfaction in similar facilities may help in making critical design decisions.

7.2.7.1.2. Durability.

7.2.7.1.2.1. The function of the space will determine the amount of durability required, for example a maintenance hangar vs. family housing. Aesthetics and how the finish/materials relate to the other design elements must also be considered, as well as cost justification.

7.2.7.1.3. Maintenance.

7.2.7.1.3.1. The use of easily maintained finishes is critical. While certain finishes may provide excellent durability, the designer must also give serious consideration to maintenance requirements. The maintenance plans of many facilities have minimal quality assurance. Finishes that wear well and are lower in maintenance requirements perform best. Establishing a maintenance schedule is the user's responsibility with coordination from Civil Engineering.

7.2.7.1.3.2. The designer should provide manufacturer suggested maintenance information and emphasize the importance of a regular maintenance schedule to the user. Indicate special products required for the maintenance program.

7.2.7.1.4. Life Cycle Cost And Appeal.

7.2.7.1.4.1. The designer must consider product performance and longevity of appeal, as well as initial cost when making selections. If the appeal of the surface of a furniture item degrades, the user will want to replace it prematurely. A product that keeps its appearance and shape longer may be a better choice over time even if the initial cost is higher.

7.2.7.1.5. Product Quality And Performance.

7.2.7.1.5.1. Numerous studies show that quality does not necessarily cost more. Quality products perform better and wear longer. Usually these products are backed by manufacturers' warranties to assure the customer's continued satisfaction after installation is complete. Select finishes and furniture items from manufacturers that honor their warranties and have a successful record of standing behind their product. Users need to ensure they keep the warranty information on hand and get items fixed promptly by the manufacturer. Users that do their own fixes may void the warranty.

7.2.7.1.6. Environmental Factors.

7.2.7.1.6.1. Designers today must consider the effects their selections have on the environment over time. Consider products that are made from recycled materials, or are easily recycled. For example, carpets from recycled plastics and walk-off mats made from old

tires. Avoid the use of finishes, adhesives, or furnishings that emit toxic fumes or pollutants during installation and curing.

### **7.3. Design Development:**

#### **7.3.1. Design Communication.**

7.3.1.1. The design development process begins after the designer has a clear picture of the design intent and requirements. The designer must communicate effectively the design and ensure the users know their needs are met. During the development of the design, the designer is required to make presentations to convey ideas and make sure everyone is on the right track. Design documentation is necessary to illustrate the comprehensive design theme and interior detailing. The designer should provide written explanations such as a design narrative to help the user understand the design and why specific selections were made. Various visual presentations, including renderings, elevations, perspectives, finish and furniture boards, must be provided to the user for approval. Renderings and finish boards must clearly illustrate the carefully planned and well coordinated color concept.

7.3.1.1.1. The user's satisfaction is an important goal, in addition to the longevity of the design. Educate the user to appreciate the long-term quality of the design. Opportunity should be given to the user for direct input throughout the submittal process and at each stage of the design development. The final design should not present the user with any surprises or issues not previously identified and addressed.

#### **7.3.2. Required Documents.**

7.3.2.1. Specific guidance, presentation format and detailed information on the development of the Structural Interior Design (SID) and Comprehensive Interior Design (CID) packages can be found in the HQ AFCEE *Interior Design Presentation Format Handbook*. The Handbook explains in detail the sections and drawings required during the submittal process and the presentation format. It includes a CID cost estimating guide as well as A-E contract information and an index of reference standards to be used by the Interior Designer during design development.

### **7.4. Design Execution:**

#### **7.4.1. Implementation.**

7.4.1.1. Once final approval of the design concept and finishes has been accomplished, a completed design package must be submitted. The contract documents must clearly convey the design intent and provide the information necessary to implement and construct the design. The HQ AFCEE *Interior Design Presentation Format Handbook* provides information on required documents.

#### **7.4.1.2. Scope Of Work.**

7.4.1.2.1. A brief but thorough description of work to be performed by the contractor should be prepared by the designer. This is used by the contracting agent to synopsize the project in the bid advertisement.

#### **7.4.1.3. Drawings.**

7.4.1.3.1. Drawings give a flat picture of the final design and are used by contractors for bidding and construction information, as well as by the customer for adequacy of space and function. The drawings also show demolition plans, new floor plans, reflected ceiling plans, design features, utilities, and finish material placement among other things. Drawings should clearly show the location and type of furniture, as well as elevations for placement of artwork and signage.

#### 7.4.1.4. Specifications.

7.4.1.4.1. The product specifications are very critical for achieving a successful final product. They must be very detailed to ensure the AF receives quality products, materials and craftsmanship. The specifications should be very tightly written and closely reviewed.

### 7.5. Interior Design Standards:

#### 7.5.1. Philosophy.

7.5.1.1. The diverse AFSPC mission requires many different and unique facilities to support our programs and people. This presents a challenge for designers regarding quality standards, use of materials, functional requirements and budget limitations. Standardizing interior building finishes throughout AFSPC facilities establishes a benchmark of desired results. Many facilities are multifunctional and accommodate many different organizations which makes one single set of standards difficult to apply. Following the installation FEP helps ensure a facility keeps its architectural integrity and interior scheme as functions change.

7.5.1.2. The text on the following pages define standards for building finish materials according to finish application, and criteria for individual building type and functional areas. These standards should be used as general guidelines for choosing the most advantageous products available. Due to varying locations, circumstances and requirements, alternate material choices may be required. The designer must research these with the user early in the project.

#### 7.5.2. Finish Materials.

7.5.2.1. All finish materials must meet current National Fire Protection Association standards, fire codes, and abrasion/wearability testing. It is the users responsibility to ensure a product meets all required tests, not the manufacturer. Request verification documentation from the manufacturer, don't rely on the words of a sales representative. The manufacturer can supply technical information with signed test results showing what their product meets or exceeds. If they cannot provide you with test information, do not use them. Where reasonable, order an additional 5 to 10 percent of finish materials to use for replacement and repair. This eliminates trying to track down matching materials in the future.

##### 7.5.2.1.1. Characteristics.

7.5.2.1.1.1. Flooring Materials. Floor surfaces should be selected with both function and aesthetics in mind. Durability, resistance to wear, ease in maintenance, comfort underfoot and slip resistance are important features.

7.5.2.1.1.1.1. Natural finish or sealed concrete floors are limited to maintenance areas, utility rooms, electrical rooms, storage areas and mechanical rooms.

7.5.2.1.1.1.2. Carpet or carpet tile should be used in most facilities unless functional requirements dictate otherwise. Exceptions are service, maintenance and industrial areas, laboratories, food preparation areas, toilets, and areas requiring frequent cleaning. Only patterned carpets with distinguishable designs of two or more colors and not shades of the same color are authorized. Avoid light colors, bold geometric patterns, and subdued tweeds. For specific requirements, minimum quality features, types and use locations, and selection guidance refer to ETL 94-3, *Air Force Carpet Standard* and the HQ AFCEE *Carpet Selection Handbook*.

7.5.2.1.1.1.3. Carpet appearance and durability depend on technical characteristics. Carpets with brand name nylon fibers will wear better and provide more resilience than those made from polyester, acrylic, or olefin fibers. Both fiber and yarn construction affect the luster, dyeability, and crushability of carpets.

7.5.2.1.1.1.4. Patterned carpets help to “mask” soiling in traffic areas. Use solid colored carpets in executive suites, courtrooms, chapels, and some lodging facilities or as a border or inset. When selecting a carpet use a large piece. A small piece will not accurately show all colors or the overall pattern. The carpet sample should be viewed from the floor to see what it will actually look like. Holding it up to your face or looking at it on a colorboard attached to a wall is not a true representation.

7.5.2.1.1.1.5. In high traffic areas and/or wet areas use a ceramic mosaic tile, quarry tile, or paver with an integral color throughout. Tiles are excellent for durability and generally require only a mop and water clean-up. These areas include building entries, reception counter areas, food lines, vending areas, food preparation areas, laundry areas, toilets and lobbies. Minimize using tile with smooth glossy finishes as they tend to be very slippery. It may be used as an accent tile in limited quantities.

7.5.2.1.1.1.6. Rubber flooring is appropriate for vending areas, stairs and landings. Use one consistent color and type throughout a facility. Special rubber stair treads should be used for the stairways.

7.5.2.1.1.1.7. Vinyl Composition Tile (VCT) should be limited to maintenance areas, break rooms, vending areas, storage rooms, utility rooms and high traffic corridors. For areas where carpet is not practical or is too costly, VCT may be used with creative patterns or borders. Sheet goods should be used rather than tile in areas where multiple seams are a clean-up problem. This includes clean rooms, laboratories, child care centers, and medical rooms.

7.5.2.1.1.1.8. Special consideration must be given when using a raised flooring system in computer main frame areas and laboratory spaces. These floor systems provide access to the wiring system in the floor and should utilize anti-static conductive floor tiles and/or carpet tiles (below 2.0 KV).

7.5.2.1.1.1.9. Use recessed walk-off mats in vestibules and on the interior side of doors that open directly to the outside to protect the carpet or tile surfaces. Avoid mats with complicated or garish designs.

7.5.2.1.1.2. Wall Base. Rubber base is preferred over vinyl for its durability characteristics. A cove style base with a lip at the bottom should be used with rubber flooring and vinyl flooring. A straight style base should be used with carpet.



7.5.2.1.1.2.1. Wood base is recommended in upgraded areas. Do not paint it, stain it instead.

7.5.2.1.1.2.2. An integral cove base with sheet vinyl flooring should be used in areas where sterilization is a concern. This leaves no seam for liquids to collect. This includes clean rooms, laboratories, child care centers, and medical rooms.

7.5.2.1.1.2.3. A tile base should be used with all tile floors. A cove style tile should be used that coordinates with the flooring tile.

7.5.2.1.1.3. Wall Materials. Interior walls serve various purposes in a facility such as sound dampening, spatial separation, and privacy. A balance between aesthetics and functional needs must be met.

7.5.2.1.1.3.1. Gypsum wall board is the minimum standard except for utilitarian areas. Concrete masonry units are restricted to utility rooms, janitor closets, electrical rooms, storage rooms, heavy equipment stairwells and maintenance areas or bays. All other existing block should be furred with gypsum wallboard or filled and covered with wallcovering.

7.5.2.1.1.3.2. Use an eggshell or satin paint finish on the walls. A flat paint is not as durable and tends to show scuff marks quicker. An epoxy semi-gloss paint should be used in moist areas such as kitchens, toilets, laundry and medical rooms. All interior paints should be lead free, with no Volatile Organic Content (VOC) or low VOC.

7.5.2.1.1.3.3. Wallcoverings can be used to add visual interest, soil hiding, enhance design characteristics, and coordinate an overall color scheme. All types of wallcovering (vinyl, fabric or acoustical) should be selected for each specific situation depending on the functional and durability requirements. Wallcoverings are categorized as follows:

Type I (Residential) - 7 oz per sq yd minimum, used in distinguished visitors suites, visiting officers quarters, executive administration areas and light-use areas

Type II (Commercial) - 13 oz per sq yd minimum, used for medium-use areas and some high-use areas

Type III (Industrial) - 22 oz per sq yd minimum, used in very high traffic areas, walls that are heavily scrubbed, and high-use areas

7.5.2.1.1.3.4. Acoustical wallcoverings may be used in auditoriums, education/ training rooms, conference rooms, dining halls, projection rooms, executive areas and large open lobbies. There are various types of acoustical wall materials and wall panels available that vary in levels of soundproofing. Usually the cost rises with a higher level of soundproofing material.

7.5.2.1.1.3.5. Fabric wallcoverings can be used in executive suites and executive conference rooms. Fabric wallcovering is hard to maintain and clean and should only be used in specialized areas.

7.5.2.1.1.3.6. Ceramic tile is appropriate for use in all toilet and shower areas. As a minimum, tile must be used on all walls behind wet areas. Tile is preferred on all walls in these areas. Accent colors or varied shapes of tile can be used as a design feature.

7.5.2.1.1.3.7. Quarry and ceramic tile, brick, glazing and glass block, and decorative polychromatic coatings can be used as function and budget requires.

7.5.2.1.1.3.8. All fire extinguisher cabinets, panel boxes and other equipment boxes should be recessed in the wall and match the wall color. All conduit, telephone wires, computer cables, pipes, etc., should be concealed behind the walls or in soffits. All electrical switch plates, electronic devices, fire alarms, and light switches should match in color and coordinate with the overall color scheme and wall color. Door hardware should be standardized throughout an entire facility.

7.5.2.1.1.3.9. When wood is used for the walls it must have a Class A fire rating. Wood-look pressboard paneling is unacceptable.

7.5.2.1.1.3.10. Do not use gypsum wall board prefinished with wall paper or vinyl wallcoverings. This material requires a seam between each panel. The visible seam is not associated with quality permanent construction. The wall boards are very difficult to patch when dented or scratched.

7.5.2.1.1.4. Chair Rails. Use chair rails in areas where there is high incidence of damage to the walls. This includes corridors with cart traffic, lounges, equipment storage areas and rooms with perimeter seating. A durable wood chair rail or molded impact resistant plastic bumper guard should be used to protect the wall surface.

7.5.2.1.1.4.1. Place the chair rail at heights proportional to the wall height and at the appropriate height where the items will be damaging the wall.

7.5.2.1.1.5. Ceiling Materials. The appropriate scale of a space is often determined by the height, lighting and detailing of the ceiling. Exposed ceilings should be used only as a deliberate design element or in maintenance areas, utility rooms, and electrical/mechanical rooms.

7.5.2.1.1.5.1. Gypsum wallboard or plaster ceilings should be used in billeting, residential facilities, toilets, locker rooms, and dormitory sleeping rooms. Water-resistant gypsum board must be used in wet areas. Ceilings should be painted 'ceiling white', which is specially formulated for maximum light reflection.

7.5.2.1.1.5.2. Acoustical ceiling tile set in a suspended grid offers sound proofing and access to structural, mechanical, communication and electrical systems. Ceiling tile standard is a white 2 ft by 2 ft tile with a white grid. Black tile may be used for projection rooms. A medium to light textured or fissured tile should be used. A heavy texture tile tends to look dirty on the ceiling as it casts shadows. There are many different styles and types of tile available on the market with varying characteristics. Appropriate research should be done to ensure a quality product that meets individual requirements.

7.5.2.1.1.5.3. Metal ceilings may be used in high visibility areas if planned and designed carefully. Recommend for some high visibility areas a combination of different ceiling treatments along with accent lighting (not track) be used for added interest and design. This is appropriate for public areas, common areas, conference rooms and executive suites.

7.5.2.1.1.5.4. Equipment added to the ceiling such as speakers, microphones, security devices and HVAC vents must match the ceiling color and not create an eyesore. Recess this equipment whenever possible.

7.5.2.1.1.6. Lighting. Natural, ambient, and task lighting should be provided in all areas. Architectural interest can be achieved with coves, soffits, up-lighting, recessed fixtures or with wall mounted fixtures such as sconces rather than just the typical 2 ft by 4 ft fluorescent fixture. In every case, energy consumption must be considered in the design and energy consumption minimized by using the most energy efficient fixtures and materials that will satisfy the design requirements.

7.5.2.1.1.6.1. Overall ambient lighting in administration areas should be provided with fluorescent fixtures integral to the ceiling grid system. Task lighting and flexibility of control should be provided at each individual work area.

7.5.2.1.1.6.2. Use incandescent lighting in dining rooms, food preparation areas, toilets, and other areas where true colors rendition is important.

7.5.2.1.1.6.3. Floor lamps should be used in living areas and billeting to create a home-like feeling.

7.5.2.1.1.6.4. Lighting in the corridors needs to be carefully planned to avoid accentuating the length. The 2 ft by 4 ft fluorescent fixtures used in long corridors should be perpendicular to the length of the corridor rather than parallel.

7.5.2.1.1.6.5. Bare bulbs are unacceptable. Use fixtures with a diffuser, lenses, globe, or have them concealed by a cove or soffit. Install uniform fluorescent lamp type (all warm white, or cool white etc.) in an area or facility and replace with matching type when re-lamping. Broken, worn or discolored lenses should be replaced with matching lenses.

7.5.2.1.1.6.6. Lighting fixtures need to be carefully selected and spaced. Excessive glare or color can occur if not carefully planned.

7.5.2.1.1.7. Window Coverings. Use window coverings that enhance the overall design scheme and meet the functional requirements.

7.5.2.1.1.7.1. Use black out blinds or draperies in all sleeping rooms.

7.5.2.1.1.7.2. Maintenance, industrial and laboratory areas should use blinds and not draperies as they are easier to clean and maintain. Use neutral colored horizontal blinds 1 in wide or vertical blinds 2 in to 3 in wide for most applications. Areas that receive direct, high intensity natural light should consider a blind or window covering with a film that cuts out the glare but still allows natural light to filter in.

7.5.2.1.1.7.3. A 100 percent Trevira fabric should be used for draperies to meet fire standards and allow machine washing. Drapery hardware should be commercial grade, rated for heavy duty. All draperies should be lined with exact matching pleats and weighted at the bottom for proper hanging. Draperies in executive areas should have a sheer for a more formal look.

7.5.2.1.1.8. Upholstery. Consider the wearability and abrasion testing when selecting an upholstery. An industry standard for test wearability is the Wyzenbeck test, measured by

“double-rubs” (DR). All upholstery manufacturers should be able to provide testing information. The minimum “double-rubs” are given by functional group and category in Attachments 1-8.

7.5.2.1.1.8.1. Use a patterned fabric for areas where there is high probability of staining. The pattern will help hide the stain. Do not use a solid colored fabric for large items of furniture as it will show staining and wear.

7.5.2.1.1.8.2. For cafeteria and industrial areas, recommend a molded plastic seat and back or a vinyl upholstery for durability.

#### 7.5.2.2. Functional Requirements.

7.5.2.2.1. The main factors that affect finish material selection and application include foot traffic; presence of food, liquids, chemicals, grease, or other potential soilage; the type of activity that occurs, and the level of quality required. Functional groups have been created to group similar facilities together that have the same functional requirements. Each functional group has a reference chart in Attachments 1 through 9 that illustrates the types of material selections appropriate depending on the “use” category. Specialized functional areas are addressed to provide specific design requirements needed to make the area functional.

7.5.2.2.2. Some facilities do not fit easily into only one functional group. In these cases, the designer must use judgment in determining the proper blend of interior finishes and furnishings. Examination of several functional groups may be necessary to compile the requirements for one project. For instance a building in the office/administrative group may include a large cafeteria thus requiring information from the food service group.

7.5.2.2.3. Categories of use as identified in Attachments 1 through 9 are:

**HEAVY-USE AREAS:** wet areas (restrooms, kitchens, laboratories), high traffic areas, and areas requiring maximum product durability

**MEDIUM-USE AREAS:** Areas used every day, but not by large numbers of people

Generally the finishes do not experience heavy wear and tear

**LIGHT-USE AREAS:** Areas that experience low traffic and light daily use

#### 7.5.3. Functional Groups.

7.5.3.1. Residential. The residential category is composed of Military Family Housing, unaccompanied personnel housing (dormitories) and missile alert facilities. Attachment 1 provides a convenient reference chart for the types of materials that are most suitable in different use conditions. Refer to the AFSPC *Housing Guide* and *Dormitory Standards* for more details.

7.5.3.2. Hospitality/Lodging. Transient housing facilities, consisting of both visiting personnel quarters, and temporary living facilities, fall under the hospitality and lodging category. Carpet corridors in hospitality/lodging facilities to create a welcome inviting feeling. Use hard surface transaction counters and kick plates on all lobby and registration desks. Attachment 2 contains a reference chart for materials that are suitable in different use conditions for hospitality and lodging facilities.

7.5.3.3. Food Service. Food service facilities include dining halls, flight kitchens, open mess facilities (officers and enlisted clubs), snack bars, and cafeterias. Most areas in these facilities can

be considered heavy-use because they are subject to high traffic and frequent food and beverage spills. Carpet is required in the seating areas of dining halls, Officers, NCO, and Airmen's clubs. It is also desirable in seating areas of some other food service areas such as golf course club houses, and large cafeterias in administrative areas. Some food service facilities may have wood, metal or other structural materials used for a decorative affect. Structural and mechanical elements can be exposed if blended in the overall design scheme. Consideration should be taken to provide dedicated areas for shared use of microwaves, refrigerators, and counter space with the appropriate amount of space as well as electrical outlets. Use materials that will baffle the noise from the kitchen and dishwashing room. Provide attractive menu boards that coordinate with the room finishes and are easily changeable in the field without having to remove the entire board. Attachment 3 provides a convenient reference chart for the types of materials that are most suitable in different use conditions.

7.5.3.4. Office/Administrative. Office/administrative areas often have the highest number of occupants. These areas vary from private offices, to open bay work spaces filled with conventional and modular furniture, to large arrangements of systems furniture. Consider all areas carefully when selecting finish materials. Care should be taken to coordinate and conceal the electrical, communications and LAN cables. Carpet should be used for all corridors and stairwell landings that are not accessed from a loading dock, industrial area or delivery area. Conference and meeting rooms should be carpeted to help with acoustic controls. Attachment 4 provides a convenient reference chart for the types of materials that are most suitable in different use conditions.

7.5.3.5. Maintenance/Warehouse. Maintenance/warehouse facilities include all functional areas in which vehicles or heavy equipment are operated, chemicals are used, there is exposure to weather, product dust and dirt, and bulk items are stored. Most areas within these facilities fall under the heavy-use heading. Attachment 5 provides a convenient reference chart for the types of materials that are most suitable in different use conditions.

7.5.3.6. Recreation. Recreation facilities encompass the most diverse functions of all the categories. They include gymnasiums, fitness centers, golf course club houses, bowling, youth and community centers, skating rinks, libraries, and theaters. Facilities such as fitness centers have constant traffic throughout the day, while facilities such as theaters have high concentrations during short periods. Golf courses, clubhouses and bowling centers contain food services. Many of these facilities require a specialized flooring treatment for each activity and acoustical wall treatments to control sound. Attachment 6 provides a convenient reference chart for the types of materials that are most suitable in different use conditions.

7.5.3.7. Medical. Medical facilities include medical centers, hospitals, clinics and pharmacies. It is important to design medical facilities that are inviting and comfortable for the patients. Consideration should be taken for the wide variety of people in different age groups that will be utilizing the facility. Dispensing window and counters should be large enough to allow room for filling out paperwork and transferring prescriptions. Consider putting a kick plate to protect the wall surface under counters--it can be of clear plastic. Special materials are available for health care such as antimicrobial flooring and carpet, cubicle curtains, and vinylized fabric. Refer to *AFSPC Medical Image Guide* for more details. Attachment 7 provides a convenient reference chart for the types of materials that are most suitable in different use conditions.

7.5.3.8. Educational. Education facilities include grade and high schools for dependent children, specialized training facilities, professional and technical classrooms, and centers for college extension programs. Attachment 8 provides a convenient reference chart for the types of materials that are most suitable in different use conditions.

7.5.3.9. Chapel. Chapel facilities include all facilities on an installation used for worship. This includes community worship, individual meditation, pastoral counseling and religious education. The worship area is a very sacred place and receives a lot of traffic putting it in the high-use category. Although it is high-use it should convey warmth and beauty through the use of wood finishes and furnishings. Attachment 9 provides a convenience reference chart for the types of materials that are most suitable in different use conditions.

#### 7.5.4. Functional Areas.

7.5.4.1. Entry/Lobby. Entrances and lobbies provide the first interior impression of a facility. The first impression of the facility will say a lot about the functions located therein. The architectural features found in the exterior design of the facility may be repeated in the lobby to provide a cohesive transition to the interior environment. Accent flooring design is an effective means of introducing color or making a smooth transition to the corridors. Durable building finishes should be used to hold up to high traffic and exposure to the outside elements. A recessed access mat or a hard surface walk off area is a must prior to reaching any carpeted area.

7.5.4.2. Corridors. Avoid designing corridors that have a long "tunnel-like" appearance. Careful manipulation and differentiation of vertical wall surfaces from the horizontal floor and ceiling planes is critical. A combination of a chair rail, lighting that runs the length of corridor, and carpet border only enhances the length of a long corridor. Emphasize vertical elements for balance. Corridors can be made interesting by adding a flooring pattern, lighting to accent artwork, wall washing, or wall sconces.

7.5.4.3. Stairwells/Landings. Stairwells and landings should emulate the finish materials and attention to detail of the surrounding areas and not be treated as a separate entity. Stairwells can be used as a transition space that ties all floors together for a coordinated overall interior design.

7.5.4.4. Restrooms. Design restrooms for easy cleaning and maintenance, but not at the expense of quality. Restroom fixtures should be wall mounted for easy cleaning of the floors. Wall mounted accessories should include a towel source, mirrors, clothes hook for shower area and trash receptacle. All plumbing fixtures, electrical and switch plates, and accessories should be satin brushed aluminum. All sinks should have a counter and a mirror that runs the entire length of the counter. Toilet and urinal partitions should be a baked enamel finish or if cost permits, plastic laminate. Do not use black seats on a white water closet. The entire water closet should be one color. Partitions for industrial areas should be prefinished metal. Ceilings in all bathrooms and locker areas should be a hard board, water resistant, painted surface. Flooring should be monolithic tile and walls should as a minimum be tile behind wet areas. Tile is preferred for use on all walls.

7.5.4.5. Locker Rooms. Locker rooms should be well ventilated, provide an adequate number of lockers, and be designed with materials that are easily cleaned and appropriate for wet areas. Space between the top of the lockers and ceiling shall be finished and flush with the front of lockers to avoid dust collecting on top of locker units. Lockers should have a vent on the unit and incorporate a shelf and clothes hook.

7.5.4.6. Conference Rooms. Maximize the flexibility of conference rooms through the use of adjustable lighting, multipurpose seating, creative ceiling finishes, acoustical wall treatment, and multi-media presentation systems. Lighting combinations include fluorescence, incandescent can lights, indirect lighting, individual controls and dimming capabilities. Carefully plan the location of electrical outlets and consider floor mounted outlets for audiovisual equipment and computers.

7.5.4.7. Break Areas/Coffee Bars. Break areas and coffee bars are important in the office environment to support the needs of the workers. These areas should incorporate a counter area with storage underneath. Designers need to consider a designated space and electrical outlet for a refrigerator, microwave, and possibly vending machines.

#### 7.5.5. Furniture.

7.5.5.1. Specifications in this chapter provide the minimum standards for furniture procured by the AF. A very important feature to consider when purchasing any furniture item is the warranty. Research how each manufacturer deals with their warranties and response time. As a user it is important to use the warranties when a problem arises rather than fix it yourself. When a piece of furniture is altered without the manufacturer's guidance or assistance, the warranty is void. Too many times the AF does not use the warranty to its fullest extent. Several different categories of furniture exist with different funding sources.

7.5.5.2. Conventional Furniture. Conventional furniture is the arrangement of free-standing furniture, including, but not limited to: administration furniture, dormitory furniture, lobby furniture, dining furniture, etc. Conventional furniture is purchased with O&M 3400 funds.

7.5.5.3. Modular Furniture. Modular furniture is similar to systems furniture except that all work surfaces are floor supported rather than panel supported. It is also referred to as automatic data processing (ADP) or electronic data processing (EDP) furniture. Modular furniture is comprised of components that are usually field replaceable or field reupholstered. For example, a user can just replace a damaged arm rather than a whole chair on site without taking the chair out of commission. Modular furniture is funded with O&M 3400 funds and is considered conventional type furniture.

7.5.5.4. Systems Furniture. Systems furniture is defined as the assembly of panels, components, and accessory items which are panel connected and panel supported to form complete individual offices (work areas). It is not freestanding/modular furniture enclosed by panels. Systems furniture is purchased and installed in existing facilities with O&M 3400 funds.

7.5.5.5. Pre-Wired Systems Furniture. Pre-wired systems furniture is that assembly of panels and components hard-wired directly into the building electrical system. The panels contain building utilities such as electrical wiring, convenience outlets, hook-ups for computer equipment and communications wiring. Prewired workstations installed in MILCON facilities are funded as part of the construction contract using 3300 funds. A "freestanding" product can not be specified in the construction contract since it cannot be funded with military construction dollars.

#### 7.5.6. Conventional Furniture.

##### 7.5.6.1. Operational Seating.

7.5.6.1.1. Use a 5 prong base for stability. Casters should be a dual hard wheel for carpet or single soft wheel for hard flooring surfaces.

7.5.6.1.2. Arms should be replaceable or removable in the field. Use a molded plastic arm for most applications as upholstered arms tend to soil easily with high use.

7.5.6.1.3. Chair backs should provide upper back support and contour to provide lumbar support. The seat pan should angle slightly to the back for more comfortable seating towards the back of the chair and have a waterfall front to ease pressure on the back of the knees.

7.5.6.1.4. Conference table type seating requires a swivel/tilt mechanism and height adjustment. Task related chairs should have an additional back angle adjustment with an upright locking position, a seat pan adjustment and a back height adjustment.

7.5.6.1.5. All fabrics should be treated with soil retardant. Base, arms, outer shell and casters should be the same color if all molded plastic. In executive areas the arms may be wood or upholstered and the base may be wood. All other areas should use molded plastic arms.

#### 7.5.6.2. Stationary or Stack Chairs.

7.5.6.2.1. This is multi-purpose seating with stacking, ganging, and tablet arm options. This is appropriate seating for briefing rooms, cafeterias, side chairs for conference rooms and offices, and training areas. When used for stacking purposes, purchase dollies to use in transportation. Tablet arms should be adjustable and move out to the side of the chair when not in use.

7.5.6.2.2. Chair frame should be chrome or a powder coated epoxy finish. Wood can be used in executive conference rooms or executive areas.

7.5.6.2.3. Use four posted legs for chairs that are stationary and not moved around much when occupied, such as perimeter seating in a conference room. Use a sled based chair for a sliding motion when scooting in and out from under a table or desk. Provide appropriate glides for either carpet or hard floor surfaces. Use clear glides on hard floor surfaces as black glides tend to leave marks.

7.5.6.2.4. Seating used in dining facilities or cafeterias should have "wipe-out channels" for ease of cleaning or a separate back and seat that do not touch. This eliminates an area for food to collect.

#### 7.5.6.3. Lounge Seating.

7.5.6.3.1. This is defined as seating that is fully upholstered for lobbies, waiting areas, lounge areas, dayrooms, and executive private offices.

7.5.6.3.1.1. All internal frame parts should be kiln-dried hardwood. All exposed parts should be cut from #1 common or better grade of hardwood with uniform grain and color uniformity.

7.5.6.3.1.2. Frame joints should be carefully fitted and secured with dowels. Frames must be reinforced with corner blocks, mitered to fit, securely glued and screwed into position while the frame is in the clamp to ensure squareness and tightness of joints. Frames held together by staples is unacceptable.

7.5.6.3.1.3. Seat foundation is to be 8-1/2 gauge sinuous wire springs clinched to insulated tie wires and strapped to the tie rails and back post. Back construction is 11 gauge wire spring construction stretched between top and bottom spring rails and secured with double



staples. The spring system should be covered with noise free insulating fabric and stapled to the frame on all sides.

7.5.6.3.1.4. Seat to be cushioned with 1.80 lbs density polyurethane foam with 32 lbs of construction. Each seat cushion is wrapped with resin treated polyester fiber to give a smooth even finished cushion. The back and arm cushions should be 1.10 lbs density polyurethane foam with 20 pounds for back and 35 pounds for arms compression. Back and arms should be topped with blended fiber batting for a smooth even appearance. All units should be constructed to allow for field reupholstering and repair.

7.5.6.3.1.5. All upholstery should be treated with soil retardants. All patterns should be matched on the vertical and horizontal for a uniform pattern on the entire piece.

7.5.6.3.1.6. Waiting area seating for medical facilities should accommodate children, pregnant women, elderly, heavy or tall people, and the physically weak. All seating should have arms to aid people in and out of the seated position. Seats of the chairs shall be firm, level with the floor and not at a decline towards the back of the chair.

#### 7.5.6.4. Tables.

7.5.6.4.1. Use a laminate top with a vinyl edging, self edge, or solid wood edge. Wood veneer top is appropriate for conference rooms and executive areas. Tops should not exceed 30 inches in height for sitting applications, and 36 inches in height for standing applications.

7.5.6.4.1.1. Tops should be a one piece construction unless the table length is too long to fit in a doorway and must come shipped in pieces. Core material must meet or exceed strength requirements for commercial standards. Particle board must have a minimum density of 48 lbs per cu ft. The core must be sanded top and bottom and without any rough edges. Laminate or veneer must be glued uniformly and evenly to ensure adhesion and stability. Applied edging must be mitered to ensure perfect edging. All wood edges must be a hardwood.

7.5.6.4.1.2. All bases must be appropriately sized to match the top. All metal bases should be a powder coated finish. Wood bases are appropriate for all wood table tops. There tends to be more maintenance as people kick the base under the table. All bases should have leveling glides. Suggest using several smaller tables to make one large conference table to allow flexibility in table arrangement and break-up. High quality folding tables may be used for dining rooms to allow changes in table layout.

#### 7.5.6.5. Freestanding Office Furniture: Casegoods.

7.5.6.5.1. This category of office furniture includes desks, credenzas, computer tables, executive "U" units and bookcases.

7.5.6.5.1.1. Metal units with laminate work surfaces should meet the standards and construction of systems furniture, but be floor supported and stand alone. Wood units should be a veneer with a hardwood edge. All units should have glides for leveling.

7.5.6.5.1.2. All drawers should be able to receive dividers. Dovetail construction should be used on all corners. File drawers must utilize full extension, stop action progressive slides with precision ball bearing for no metal to metal connection for a smooth, quiet operation. File drawers must accommodate various filing options.

7.5.6.5.1.3. All drawers should be lockable and keyed alike with removable cylinders for rekeying.

7.5.6.5.1.4. All desk tops should have two grommets a minimum of 2 inches diameter in size to allow for electrical cords. Location of grommets will vary depending on application.

#### 7.5.6.6. Filing Cabinets.

7.5.6.6.1. Metal cabinets should be rolled metal seamless on 3 sides with rounded corners for a smooth look. Wood cabinets should use a veneer with a hardwood edge.

7.5.6.6.1.1. All cabinets require an interlock system on drawers so only one drawer may be extended at one time. Drawers should have a ball-bearing suspension system with an anti-rebound device. Drawer pulls should be recessed so they do not get knocked off or get in the way of traffic.

7.5.6.6.1.2. All lateral files should have front-to-back and side-to-side filing options. Options should be allowed for a fixed shelf on five high units, roll-out shelves and drawers. All units should have glides or leveling devices to ensure drawers or doors open properly.

7.5.6.6.1.3. Color should be electrostatically applied at the factory.

#### 7.5.6.7. Temporary Living Facilities And Dormitories: Casegoods.

7.5.6.7.1. This furniture includes headboards and bed frames, night stands, bunk beds, wardrobes, units with drawers and open shelves, TV armoires, desks, writing tables, dressers, chests, mirrors, end tables, and cocktail tables.

7.5.6.7.1.1. All solid parts and wood veneers should be northern red oak or equal hardwood for durability. The finished product can be treated and stained to get the color required to match the rest of the room. All furniture should be constructed of solid wood veneers or hardwood solids of five-ply plywood with wood veneers. Particle board and cardboard are not acceptable. Back piece must be equal to the sides in thickness or a minimum of 1/4 inch. Desk tops may be surfaced in a plastic laminate to match the wood grain and finish of other exposed items. Hardwood impact edges should be used.

7.5.6.7.1.2. Drawer fronts, doors, desk tops, and other components should be removable and replaceable on site. This extends the life of a product by changing individual damaged parts rather than ordering an entire new unit.

7.5.6.7.1.3. Preferred method of construction is a dry construction method with metal-to-metal connections. This method creates a stronger, more durable case due to the absence of glue joints which tend to fail. The screws, hinges, etc. should be concealed or inserted into the solid lumber. This gives a clean, high quality look. Units held together with only glue and staples are unacceptable.

7.5.6.7.1.4. All drawer joints should have dove-tail joinery. All pulls should be flush or recessed for dormitory furniture with high use. This prevents the pulls from being pulled or knocked off. Drawer bottom should sit in a grooved area of the drawer sides and be reinforced. Use epoxy coated metal drawer slides with nylon bearing rollers and have an automatic stop feature.

7.5.6.7.1.5. TV armoires and shelving units should have grommet holes in the back to run electrical and telephone cords. All large units should come with leveling glides.

#### 7.5.7. Systems Furniture.

7.5.7.1. Systems furniture is the combination of various sized panels that support individual components to create a work area or workstation. Systems furniture is typically used in an open office plan and should not be used in individual offices. It is not cost effective to purchase panels to put up against existing walls that already provide privacy. Individual hard wall offices should use conventional or modular furniture. Systems furniture components consist of work surfaces, shelving, file cabinets, storage units, lighting, counters, and drawers. Accessory items include coat hook, tackboards, paper organizers, and shelf dividers. For more information on programming and funding refer to ETL 90-2, *General Policy for Pre-Wired Workstations and Systems Furniture*. For a list of standards, flammability, testing requirements, and a minimum base guide specification refer to ETL 88-10, *Pre-Wired Workstations Guide Specifications*.

7.5.7.2. Systems furniture allows for a high degree of flexibility in open office plans and flexibility in individual workstations. It is a modular system with a wide variety of components to choose from to meet the users needs. Specialized components are available to meet the needs of office areas, libraries, medical clinics and educational systems. Most systems provide hanging slots at 1" increments, maximizing height adjustment possibilities for all components. Systems furniture offers various electrical components and raceways and options for both ambient and task lighting.

7.5.7.3. Open office plan is the elimination of interior hard walls while maintaining essential divisions and building support, but not an enclosed division. Semi-private spaces are developed through the use of partial height panels arranged to facilitate the work flow and functional tasks. To accommodate the dual needs of privacy and communication, work areas should provide visual privacy one direction, but personal interaction when facing another direction. For more complex tasks and team settings, private work areas surrounding common group areas should be provided. Use panels to separate adjacent work areas only where necessary to avoid excessively compartmentalized mazes. When designing open office plans, do not forget to plan dedicated areas for coffee, vending machines, coat storage, and break areas.

7.5.7.4. A single type or manufacturer of systems furniture should be used throughout an entire facility. A hierarchy of spaces should be designed that range from clerk/secretary level to office worker to supervisory levels based on workstation size and additional components needed per work area. Each standard workstation layout should be standardized throughout an entire facility.

7.5.7.5. Vary the height of the panels throughout an area to add interest and match specific function. Use a lower panel plus or minus 42 inches for reception or waiting areas permitting a longer viewing distance or for panels against a window. Use a plus or minus 60 inch panel for spaces requiring visual privacy and acoustical support when at a seated position. Panels that are taller than 60 inches tend to create an undesired maze or tunnel effect. Tall panels should be used to a minimum and can be incorporated into a design at various locations to add a vertical element. Panels that exceed 69 inches in height are considered to form corridors by Uniform Building Code and must meet exiting requirements.

7.5.7.6. Most of the office systems furniture typical layouts rely heavily or exclusively on square component shapes and orthogonal space layouts. The introduction of curved panels, panels placed at different angles, and panel windows will provide physical and visual relief, helping to break-up

the “boxy” maze of repetitive spaces. Locations appropriate for this treatment include corner panels at the beginning or end of a series of paneled spaces, at intersections of circulation corridors, and at panels near reception areas. Acrylic glazed window panels are unacceptable as they exceed flame spread and smoke development requirements.

7.5.7.7. Acoustical performance ratings should be based upon the workstation design. While the sound transmission class (STC) and noise reduction coefficient (NRC) rating contribute to the overall acoustical performance, the acoustical role of panels is relatively minimal in the overall environment when compared to sound absorptive properties of other finish surfaces. In addition, panel hung components greatly reduce the quantity of acoustical contributing area. ETL 88-10, *Prewired Workstation Guide Specification*, Paragraph 2.2.12, Panel Acoustics, calls out a minimum of .80 NRC and 20 STC. Most major manufacturers do not comply with the higher .80 NRC and 24 STC without providing their most costly high performance panels. Many times the higher .80 NRC rating is obtained by adding more fluff of sound absorbing material under the skin of the panel creating an unattractive “puffy” panel. The designer must coordinate the NRC and STC ratings and determine if the additional performance is worth the added cost to the AF.

7.5.7.8. When designing the layout and sizing of the electric distribution system serving prewired systems furniture the designer needs to consider other sources of harmonics and the cumulative effect of harmonics on upstream portions of the system. Harmonics cause distorted waveforms, a concentration of currents in the neutral and consequent heating of associated conductors and equipment. Since electronic data processing (EDP) equipment generates high levels of harmonics, a full size neutral should be provided for each EDP circuit. Suggest the panel electrical system be 4 circuit/8 wire with two oversized neutrals to reduce the harmonic imbalance. An overall review of the electrical system should be done by a qualified electrical engineer prior to the purchase of the system furniture to be sure the building can support the new furniture.

#### 7.5.8. Artwork And Accessories.

##### 7.5.8.1. Artwork.

7.5.8.1.1. Artwork for a building should be purchased by the AF for public spaces and common areas. This includes waiting areas, lobbies, corridors, conference rooms, break rooms, billeting rooms, and recreational areas. Artwork for individual offices, dormitory rooms, and workstations should be left up to the occupant.

7.5.8.1.1.1. Artwork throughout an entire facility should follow set standards for matting and framing. There should also be a consistent theme. Suggestive or controversial subjects should be avoided. A facility with more than one floor can change their scheme on each floor as long as there is some type of transition.

7.5.8.1.1.2. Consider using security locks on any artwork located in areas where it may have a tendency to be pilfered. All artwork must be attached to the wall in a manner that keeps the piece straight and aligned.

##### 7.5.8.2. Artificial Plants.

7.5.8.2.1. Artificial plants should be purchased with a flame retardence.

##### 7.5.8.3. Bulletin Boards/Tackboards

7.5.8.3.1. Bulletin boards or tackboards should be supplied at common areas to put up notices and announcements. Do not allow this type of information to be taped to the walls or on doors--it looks unprofessional and the tape takes the finish off the surface it is put on.

7.5.8.3.1.1. The type and style of board should match the signage found throughout the facility. It should coordinate with the other building finishes.

## Chapter 8

### INTERIOR SIGN STANDARDS

#### 8.1. General Information:

##### 8.1.1. Uniformity.

8.1.1.1. Interior signage is an important information source and unifying element in all of our facilities. The AFSPC standard is to have all interior signage in a facility consistent and uniform in color, style, type, and format. To the maximum degree possible, this consistency should be maintained throughout an installation. Uniform signage looks professional and contributes to the organizations credibility.

##### 8.1.2. Maintenance.

8.1.2.1. Interior signage should conform to the standards established in AFP 88-40, *Sign Standards*, Chapter 9. The interior signage system selected for a facility or installation should be easily maintained and as maintenance free as possible. Assure the sign system is flexible to accommodate frequent changes in personnel and office reconfigurations or relocations.

##### 8.1.3. Compatibility.

8.1.3.1. Ensure interior signs are compatible with interior architectural color schemes. Keep interior signs to a minimum. Ask: "Is this sign necessary?". Make work area signs clear and meaningful. Ask: "How important is this message?".

#### 8.2. Interior Sign Standards:

##### 8.2.1. Authorized Sign Types.

8.2.1.1. Building interior signs of type AA1, AA2, AA3, BB1, BB2, BB3, BB4, BB5, BB6, BB7, CC1, CC2, DD1, DD2 and EE1, as identified in AFP 88-40, are authorized and appropriate at AFSPC installations.

8.2.1.2. Service, concession and regulation symbols, as identified in AFP 88-40, Chapter 10, are authorized and recommended for interior signage system use in AFSPC facilities.

##### 8.2.2. Colors.

8.2.2.1. Colors on interior signs for AFSPC facilities need not be white letters on standard blue background as stated in AFP 88-40. Interior sign colors should match the building interior design scheme. Sign colors should be dark background with light letters for high contrast. The background should be a dark neutral color, such as black, dark gray, bronze, blue, etc. Corners may be rounded, if preferred.

##### 8.2.3. Americans with Disabilities Act Requirements.

8.2.3.1. Interior signs must conform to the Americans with Disabilities Act requirements for facilities accessible to the public.

##### 8.2.4. Mounting.

8.2.4.1. All interior signage must be mounted in a frame or in a signage system designed for and consistent throughout the facility. Door mounted signage is discouraged.

8.2.4.2. All interior signs in a facility must be mounted consistently. All signs of the same type must be mounted at the same height wherever possible.

8.2.4.3. Use easels for the display of large, rigid, temporary posters and announcements of short-term events. Taping notices of special events, temporary directions, etc., on walls, windows, and doors is not authorized in AFSPC facilities as it damages the finish, increases maintenance costs, and is unsightly.

8.2.4.4. Smaller paper rosters, notices, and other unframed items of a temporary nature should be neatly arranged on a framed bulletin board. Rosters, notices, and photographs within individual cubicles or offices should also be framed or placed on bulletin boards. They should be neatly arranged and in good taste. Do not hang items on systems furniture that may tear the fabric.

### **8.3. Interior Sign Recommendations:**

#### **8.3.1. Characteristics.**

8.3.1.1. While there are many different types and styles of interior signage, the following interior signage system characteristics have been found to work well in our facilities and satisfy the essential characteristics of flexibility, durability, low maintenance, availability, and clarity.

8.3.1.1.1. Use a layered construction of acrylic sheet providing a removable strip with die cut vinyl letters for office symbols and occupant names.

8.3.1.1.2. The design should provide for a monolithic, one-piece look when lettering strips are in place.

8.3.1.1.3. Replacement lettering should be easily accomplished by maintenance personnel without requiring removal of the sign frame.

8.3.1.1.4. Interior lobby directories shall be non-illuminated and have replacement inserts. Only departments or room numbers shall be shown; individual names should not be posted. A directory with an area for a building diagram on the left and inserts on the right is the preferred AFSPC method.

## Chapter 9

### DORMITORY STANDARDS

#### 9.1. General:

##### 9.1.1. Applicability.

9.1.1.1. AFSPC has established the following standards for dormitories throughout the Command. These standards apply to all AFSPC installations. AFSPC units tenant on another MAJCOM/DoD installation will adhere to the host command's dormitory standards. The intent is to supplement guidance published in the *AF Facility Design Guide for Enlisted Dormitories*, with detailed guidance targeted for AFSPC-owned and/or operated dormitories. Although the information contained within this guide pertains mainly to new construction, engineers, architects and programmers should attempt to implement the same types of features during major dormitory upgrades/renovations whenever possible.

9.1.1.2. Installation Commanders may waive dormitory standards (AFI 32-6005, *Unaccompanied Housing Management and Operations*, Chapter 2) for a period not to exceed 30 days for reasons of military necessity. For periods exceeding 30 days, written approval must be obtained from HQ AFSPC/CE. In addition, HQ USAF/CEH must be notified with details for reducing/waiving standards, estimated get-well date, and a plan of corrective action.

##### 9.1.2. Other Standards.

9.1.2.1. In general, the standards under other chapters of this handbook are also applicable to dormitories; therefore, they are not repeated in this Chapter. The information presented in this chapter pertains specifically to dormitories.

##### 9.1.3. Perceptions.

9.1.3.1. The dormitory neighborhood provides the first impression of the occupant's home to visitors and new occupants. As such, it should be sited, designed, landscaped, and cared for in a manner which allows the airman to feel he is an important part of the AF community. First impressions to visitors as well as dormitory occupants are extremely important to long-term perceptions of the living conditions provided by the dormitory environment. These perceptions ultimately affect the individual's morale and work performance. These types of issues must be taken into consideration by the designer, program manager, and Base Civil Engineer from project conception through construction completion. Undetected errors and oversights in the early planning stages could lead to disastrous results. However, thoughtful planning and creative designs can yield "homes" today's airmen so richly deserve.

##### 9.1.4. Design Flexibility and Vision 2020.

9.1.4.1. Design enlisted dormitories with the flexibility to accommodate enlisted personnel in all ranks. Modules must also be designed for easy conversion into private apartments as proposed by Vision 2020. Allow such conversion with minimal construction requirements without drastically affecting the overall construction cost. Do not design modules explicitly in accordance with Vision 2020 goals. The tables at the end of this standard illustrate current standards for construction of new dormitories. These standards must be followed until DoD approval of Vision 2020 or some variation.



#### 9.1.5. Self-Help.

9.1.5.1. One of the tools for renovating dormitories is the self-help program. Often, the most innovative ideas and most motivated work force can be found in the residents themselves. Encourage self-help efforts in and around dormitories as much as possible; however, provide guidance and review self-help plans to ensure projects comply with this standard and the installation FEP.

### 9.2. Programming:

#### 9.2.1. Project Development.

9.2.1.1. Along with developing the Requirements and Management Plan (RAMP), project packages should include a detailed economic analysis, current housing market analysis, and pictures of the current situations at the installation. These additional documents provide valuable information and evidence to justify program funding.

#### 9.2.2. Siting.

9.2.2.1. Site new construction in accordance with the installation Comprehensive Plan (General Plan or Comprehensive Planning Framework).

#### 9.2.3. Scope Requirements.

9.2.3.1. Current installation unaccompanied housing (UH) requirements are based on providing adequate bedspaces for the estimated number of authorized, unaccompanied E-1 through E-5 (*AF Housing Market Analysis Guidance Manual, Oct 93*). However, future requirements should be based on providing adequate bedspaces for all *first-term* airmen (E-1 through non-career E-4). The AF Single Occupancy Initiative proposes allowing career E-4 and above to live off-installation with allowances regardless of the occupancy rate. New construction should not be planned when expected demand falls below available UH. When preparing programming documents (DD Form 1391 and RAMP) for UH projects, number of bedspaces and gross facility area must be calculated.

##### 9.2.3.1.1. Number of Adequate Bedspaces.

9.2.3.1.1.1. For enlisted dormitories, bedspaces are measured in increments of 118 sq ft, including diverted and inactive units. The maximum space count in any room is two.

9.2.3.1.1.2. For officer dormitories, bedspaces are counted by the number of rooms/suites providing the adequate net living area specified in AFI 32-6005, Table 2-2.

9.2.3.1.1.3. "Adequacy" is defined in AFI 32-6005, Paragraph 2-4. Existence of a central latrine, lack of HVAC or a kitchen shared by two rooms, and double occupancy does not constitute substandard housing. "Diverted" units are spaces which are inactive, or not available for use due to renovation or major maintenance, or are being used for any purpose other than unaccompanied living space.

##### 9.2.3.1.2. Number of Required Bedspaces.

9.2.3.1.2.1. Obtain the number of military authorizations for the installation, by grade. This can be obtained through the installation manpower office, or HQ AFSPC/XP.

9.2.3.1.2.2. Calculate the number of estimated unaccompanied personnel by applying the accompaniment rate to the number of military authorizations. Use the published rate in the most current Housing Market Analysis, or obtain from the installation CBPO. The accompaniment rate is defined as the percentage of assigned personnel who are accompanied. In remote overseas locations, assume an accompaniment rate of 0 percent.

9.2.3.1.2.3. Calculate the number of authorized, unaccompanied non-career E-4s by estimating that 25 percent of all E-4s are non-career E-4s, since most enlisted personnel are promoted to E-4 after 36 months time in service, and remain an E-4 for about 48 months.

9.2.3.1.2.4. The number of required bedspaces is equal to the number of authorized, unaccompanied personnel in grades E-1 through non-career E-4. This will provide a single occupancy room for all personnel.

9.2.3.1.2.5. The difference between the number of adequate bedspaces and the number of required bedspaces is the UH shortfall for the installation.

#### 9.2.4. Space Calculations.

##### 9.2.4.1. Areas included in the net living space.

9.2.4.1.1. Generally, this is the area bound by the interior walls of the room on which a piece of free-standing furniture can be permanently placed. Include all door swings with the exception of the main entrance door swing and vanity cabinet door swing for vanities/lavatories constructed within the living/sleeping space. Include items of mechanical equipment such as fan-coil units, radiators, and base-board heaters. For existing 180 net sq ft, room-bath-room modules ("2+2 modules"), the closet space and main entrance door swing is included in the net living space calculation.

##### 9.2.4.2. Areas Not Included in the Net Living Space.

9.2.4.2.1. Exclude space allocated as a walk-in/built-in closet and the main entrance door swing (if the door swing encroaches upon the interior living space). Also exclude the vanity cabinet door swing for vanities/lavatories constructed within the living/sleeping space. In addition to the walk-in closet, main entrance door swing, and vanity cabinet door swing, all other areas shared by more than one room are not included in the net living space calculation. This includes bathrooms and kitchens, if included in the module design. Exclude any furred-out columns, pilaster, and mechanical chases extending into the living/sleeping area from the wall plane, provided such items extend from floor to ceiling.

##### 9.2.4.3. Gross Room-Bath-Room Module Area.

9.2.4.3.1. This area is defined as the area within the walls comprising the perimeter of a room-bath-room module. Measure from the centerline of perimeter walls shared with interior corridors, common chases, or other rooms. Measure from the outside face of exterior walls.

##### 9.2.4.4. Gross Building Area.

9.2.4.4.1. This area is measured to the outside face of the exterior enclosure walls. Do not include normal roof overhangs in gross building area. Exterior covered areas such as balconies (requires structural support) count as half-scope, and are measured from the face of the enclosure wall to the edge of the covered area. Stairs and elevator shafts count as half scope per the floor they serve. When calculating the gross building area for programming purposes,

multiply the number of modules required (determined by the required number of bedspaces) by the maximum gross building area per module, as defined in Table 1. There is no maximum gross building area per module for unaccompanied officer housing; however, use a “common sense” approach by comparing the net living space requirements for enlisted and officer personnel.

#### 9.2.5. Unaccompanied Enlisted Housing (UEH) Facility Standards.

9.2.5.1. HQ AFSPC UEH Construction Policy. All new dormitories and existing dormitories undergoing MILCON renovation will be designed to the Tri-Service UH Construction Standard, room-bath-room configuration. Dormitories undergoing O&M-funded, whole building revitalization will also be designed to the Tri-Service UH Construction Standard. All other renovation projects should be considered for adaptation to the new standard, based on fiscal constraints, economies of construction, programming limitations, and availability of existing UH. Existing 180 net sq ft, room-bath-room modules converted to the new standard can only house one first-term airman, effectively reducing a dormitory’s maximum capacity by one-half. Refer to the HQ USAF/CE letter, dated 16 Feb 95 and HQ AFCEE’s *Facility Design Guide for Enlisted Dormitories*, for general construction standards. See table below for summary.

9.2.5.2. Waivers to the Tri-Service UH Construction Standard. Installations should comply with the new Tri-Service Construction Standard for all new construction and renovation to existing dormitories. This applies to MILCON and O&M-funded projects. Existing building configuration constraints, historical building considerations, and other existing conditions may warrant deviation from this standard. Waiver requests will include economic analyses, based on the new standard, supporting renovation over new construction, and supporting the proposed design over strict compliance with the Tri-Service Standard.

**Table 9.1. Unaccompanied Enlisted Housing Construction Summary.**

GRADE	MINIMUM/MAXIMUM REQUIRED NET SQUARE FOOTAGE/ PERSON	OTHER REQUIREMENTS
E-1 THROUGH E-4 (NON-CAREER)	11 SM (118 SQ FT)	No more than 1 person per room No more than 2 persons per module Shared bath Shared kitchen
E-4 (CAREER) THROUGH E-9	22 SM (236 SQ FT)	1 person per module Private bath Private kitchen
MAXIMUM MODULE GROSS AREA	47 SM (506 SQ FT)	See Paragraph 3d(3) for module gross area calculations.
MAXIMUM FACILITY GROSS AREA PER MODULE	66 SM (710 SQ FT)	See Paragraph 3d(4) for module gross area calculations.

9.2.5.3. The standards illustrated above should be used to program and construct new dormitories, or design major renovations to an existing dormitory. Designers should not be limited to traditional “side-by-side” room modules and large 200-room buildings for the overall design. Groupings of small buildings, such as those found in contemporary apartment communities, and other community plans which create a “neighborhood” atmosphere should be explored for economic feasibility.

9.2.5.4. Existing 180 net sq ft, room-bath-room modules, are not considered inadequate and cannot be used as sole justification for reconfiguration to the Tri-Service UH Construction Standard. Other compelling reasons, such as failing infrastructure, and ailing finishes and fixtures, should be the main justification for facility renovation.

#### 9.2.6. Unaccompanied Officer Housing (UOH) Facility Standards.

9.2.6.1. The facility configuration may vary from a single sleeping room with a private bath and a private kitchen, to a single dwelling with a private living room, bedroom, and bath. Refer to AFI 32-6005, Chapter 2, for minimum requirements. Finishes, fixtures, appliances, and other general design guidance specified for enlisted dormitories should be applied to construction or renovation of officer housing as well. See Table 9.2 for summary.

**Table 9.2. Unaccompanied Officer Housing Construction Summary.**

GRADE	MINIMUM REQUIRED NET SQUARE FOOTAGE/PERSON	OTHER REQUIREMENTS
O-1 AND O-2 W-1 through W-4 GS-11 and below	250 SQ FT	1 person per room Private bath Private living/sleeping area Access to kitchen/kitchenette within same building
O-3 THROUGH O-10 GS-12 and above	400 SQ FT	1 person per room Private bath Private living room Private sleeping area Semi-private kitchen/kitchenette

#### 9.2.7. DoD Civilian and Contractor Standards.

9.2.7.1. At some locations, the AF may be obligated to house DoD civilians and/or private contractor personnel. Follow the housing requirements as indicated above for DoD civilians. For contractor personnel, the contract should stipulate minimum housing requirements dependent upon their relative grades in the company. However, contracts will not include “special” features which do not comply with AF standards. Contractor housing must meet AF dormitory standards to facilitate future use should contractor personnel be reduced or eliminated. The Wing Commander may request waiver variations from the AF standards based on special circumstances. If contractor housing standards are not indicated in the contract, follow UEH or UOH standards based on the individual’s responsibilities within the company as compared to AF personnel. Consult AFSPC housing personnel should further guidance be required.

### 9.2.8. Building Configuration.

9.2.8.1. Although other variations exist, low-rise residential airmen dormitories generally fall into two basic configurations; Type A and Type B. Over the past ten years, a significant improvement in the inventory has been accomplished through the conversion of Type A dormitories to Type B plan configurations by designing the central corridor space into semi-private baths, and adding balconies as exterior corridors. During the 1990s, a growing emphasis on rehabilitating existing resources is anticipated.

9.2.8.1.1. Type A Plan - The most notable feature of the Type A dormitory is the central corridor through which occupants enter their rooms. Building entry/exit points are few, located at the extreme ends of the central corridor, and often articulate two connected wings. Windows in the opposite exterior wall of each room open directly to the outdoors. Bathroom and toilet facilities may be integrated into individual units, shared between adjacent units, or centralized in a common facility within the wing (frequently called a “gang latrine”). These centralized latrines are common in older Type A dormitories; however, these type of latrines will not be considered for new construction or kept for major renovation/revitalization. The energy efficiency of a central, double-loaded corridor with few penetrations in the building shell give Type A configurations significant advantages in cold regions, where snow removal from exterior walkways and balconies would be a major operations and maintenance concern, as well as safety concern. Through-unit ventilation is generally superior in Type A units, as well.

9.2.8.1.2. Type B Plan - The major feature of a Type B dormitory is the presence of an exterior walkway/balcony along the building perimeter, replacing the interior corridor of a Type A dormitory. Individual room entrances and windows open onto these exposed corridors. Bathroom and toilet facilities are integrated into individual units or shared with an adjacent unit. The exterior balconies of Type B configurations offer needed solar shading and wind trapping in hot climates and through-ventilation must be mechanically assisted. Due to the number of openings in the exterior walls, Type B dormitories are less energy efficient than Type A units. When designing Type B facilities, ensure balconies are wide enough to provide sufficient circulation paths for multiple residents. Overhangs must also be designed to provide adequate protection from inclement weather.

## 9.3. General Standards:

### 9.3.1. Landscaping.

9.3.1.1. Well-designed and maintained landscaping is essential to a sense of wholeness in a community. It creates a “park-like” environment, providing private areas, screening undesirable views, and inviting individuals to utilize the area in and around dormitories for outdoor activities.

### 9.3.2. Site Amenities.

9.3.2.1. Consider, and provide when appropriate, those site amenities which support outdoor activities and encourage socialization and recreation in common areas. These include building, area, and walkway lighting, bicycle racks, fixed sports equipment and areas, drinking fountains, signage, and dumpster and equipment enclosures.

9.3.2.2. Well placed site furniture such as benches, tables, trash receptacles, and barbecue grills promote and encourage participation by the dormitory occupants. Choose items manufactured

from durable materials with low maintenance finishes and which are compatible with the architectural theme.

9.3.2.3. Covered outdoor pavilions should include privacy screens and appropriate utility services (water, electricity) and lighting for convenience. They should be compatible with the architectural character of the dormitories and be of the same permanent materials. When possible, pavilions should be designed as an integral part of the design of new dormitories to fully integrate them into the overall theme. Avoid wooden structures with excessive "ginger-bread" ornamentation as they require considerable maintenance and the decorative parts are easily damaged or pilfered. Locate pavilions in reasonable proximity to dormitories to avoid excessive walking; however, they should not be sited so close as to disturb other occupants when activities are underway.

#### 9.3.3. Parking and Circulation.

9.3.3.1. The entire parking area and "green space" around dormitories should be developed into a landscaped neighborhood providing vehicle parking, recreational opportunities, service access, noise control, and adequate drainage. Perimeter vehicular circulation and parking allow for human-scaled common areas, and encourage pedestrian connections within dormitory complexes.

9.3.3.2. Care should be taken to reduce, or eliminate, headlight glare from parking areas into the dormitory living spaces. When possible, locate parking behind the buildings in lieu of between the street and the dormitories so the buildings will screen the cars from the street. Where the parking must be located near the street, consider screening with landscaping or earth berms. Design the parking area to accommodate easy snow removal, handicapped parking, and handicapped access.

9.3.3.3. Provide a minimum parking ratio of 0.75 cars per occupant.

9.3.3.4. A series of small landscaped parking lots is more desirable than a of single large lot.

9.3.3.5. In some instances, designated areas for vehicle washing may be practical. Ensure adequate drainage and consult with installation environmental engineers to determine the need for an oil/water separator.

9.3.3.6. Provide appropriately located interconnecting sidewalks at least 4 feet wide and perimeter sidewalks which are a minimum of 6 feet wide.

9.3.3.7. Consider providing covered and enclosed bicycle/motorcycle parking with photoelectric-switched security lights and means to secure cycles. Ensure motorcycle parking areas are constructed of reinforced concrete to avoid damage to pavement from motorcycle stands.

### 9.4. Exterior Standards:

#### 9.4.1. Finish Materials.

9.4.1.1. All exterior construction materials must reflect standards in the AFSPC *Facilities Excellence Guide*, the installation FEP, and Comprehensive Plan, Architectural Compatibility Element. Exterior surfaces should be brick or other textured material. Avoid exposed Concrete Masonry Units (CMU). Ensure all support buildings and structures match dormitories in materials and architectural style.

#### 9.4.2. Handicap Access.

9.4.2.1. Provide well-defined handicapped access in accordance with the Americans with Disabilities Act requirements.

9.4.3. Entrances.

9.4.3.1. Entrances must be appropriately incorporated into the architectural appearance of the overall building and the main entrance should be easily identifiable. Consolidate convenience containers such as waste receptacles and newspaper racks in a lounge, not at the entrance where visible from the exterior.

9.4.4. Lighting.

9.4.4.1. Provide integrally designed security lighting with spot lighting for exterior signs and building numbers, all operated by photoelectric switches.

9.4.5. Windows.

9.4.5.1. Provide double-glazed, thermally insulated, double-hung or sliding windows with sashes which tilt for easy cleaning in accordance with the installation FEP. Include insect screens. Consider tinted glass and building overhang depending on facility orientation to cut down excessive natural lighting, glare, and room heating.

9.4.6. Roof and Wall Penetrations.

9.4.6.1. Ensure that all roof penetrations blend with the roof; however, avoid unsightly roof-mounted equipment. If equipment must be roof-mounted, provide screening compatible with the buildings appearance. Avoid vents, pipes, conduits, etc. penetrating or mounted on the exterior walls, when such items are absolutely necessary, they are to be painted the same color as the penetrated exterior surface.

9.4.7. Other Considerations.

9.4.7.1. Include freeze-proof hose bibs for lawn care/landscape maintenance.

9.4.7.2. Provide exterior electrical outlets with Ground Fault Interrupter (GFI) protection for lawn care equipment and outdoor recreation.

9.4.7.3. Consider solar panels for domestic hot water, where climate supports and in accordance with the installation FEP standards. Use passive solar elements for building heat and lighting where possible.

## 9.5. Interior Standards:

9.5.1. Other Standards.

9.5.1.1. The following interior standards are those which pertain primarily to dormitories. In general, the design standards provided under other chapters and Attachment 1 of this handbook are applicable to dormitories also.

9.5.2. Importance.

9.5.2.1. UH standards are required to maintain certain levels of quality in dormitories to support the mission and quality of life for personnel. The design of facility interiors directly impacts the quality of life for dormitory occupants. Interior scale, senses of place, order, and wholeness, harmony of color and texture, utility, economics, and safety must be synthesized with architectural

spaces and user programs. Much can be done to enhance the appearance and perception of rooms and spaces of limited size through thoughtful configuration of plan, volume and openings, and well-scaled detailing, finishes, and furnishings selections.

### 9.5.3. Functional Area Standards.

#### 9.5.3.1. Sleeping and Living Space.

9.5.3.1.1. Paint all walls. There should be no bare, exposed, or painted CMU walls.

9.5.3.1.2. Provide wall-to-wall, subdued, multi-colored carpeting, except at door entrances. Install other durable materials at entry foyer, matching other finishes. Choose carpet and foyer colors which allow residents to personalize the sleeping/living area. Finishes should not dictate colors/styles of resident-owned furniture, decor, and other personal items.

9.5.3.1.3. All woodwork should match.

9.5.3.1.4. Provide an individual, occupant-adjustable room thermostat for heat, air conditioning, and ventilation. Do not include locking covers. Strongly consider reversible-blade ceiling fans, especially in temperate regions where HVAC may not be provided. If installed, adjustable speed, wall-mounted switches must be provided.

9.5.3.1.5. Provide modular phone jacks and cable television receptacles. A minimum of one set must be installed in opposite walls.

9.5.3.1.6. Increased attention should be paid to the high-tech personal environment characterizing many airmen's lifestyles today. Computers and other audio-visual equipment requiring special power or communications systems and/or special acoustical, mechanical, or lighting accommodations must be considered during design. Provide conduit for the future installation of networked computer systems (LAN) and ensure location considers glare from windows and suggested placement of room furniture.

9.5.3.1.7. Provide adequate lighting: indirect or ceiling-mounted fixtures with dimmer, for area lighting, and a small flood/can light directly over the entry to allow shielded entry light without waking other occupants. In any case, do not use fluorescent fixtures or track lighting in the sleeping/living areas.

9.5.3.1.8. Provide both mini/vertical blinds and washable drapes with blackout lining in each room. Ensure drapes extend beyond window frames to effectively block incoming light. Window treatment must be consistent throughout the dormitories to give a common exterior view of building complexes.

9.5.3.1.9. Provide occupant-removable insect screens if necessary to wash windows.

9.5.3.1.10. Particular attention should be given to sound attenuation, both from outside sources, such as aircraft, traffic, and neighboring buildings, and from adjacent occupants.

#### 9.5.3.2. Closet(s).

9.5.3.2.1. Provide at least one closet per room occupant. The closet should be structurally-integrated into the room ("walk-in" closet), and be located adjacent to the dressing area, if possible. Wardrobes or other furniture items substituted as a built-in closet are not suitable substitutes.



9.5.3.2.2. Provide a solid core swinging or pocket door. A lock set may be provided, but is not required.

9.5.3.2.3. Interior dimensions of the closet should be at least 60 inches wide by 28 inches deep by 84 inches high, minimum (20 sq ft). Include a shelf between 66 and 72 inches high. If ceiling height exceeds 84 inches, consider including two shelves, space permitting. Provide larger closets if module configuration allows.

#### 9.5.3.3. Dressing Area.

9.5.3.3.1. Provide a room configuration which allows a dressing area with lavatory for each sleeping room.

9.5.3.3.2. Use a drop-in lavatory or integral cultured marble vanity top. Consider other solid surface vanity tops with integral lavatory, such as “Nevamar”, or “Corian”. In any case, tops should be manufactured to resist stains and burns, or be easily refinishable resembling original condition.

9.5.3.3.3. The vanity should measure a minimum of 36 inches wide, with a standard depth to accept a full-size lavatory. Use a commercial-grade, two-door, wood, or other durable finish, vanity cabinet finished to match other finishes in room. If wood finish is used, it must match other wood items in the room.

9.5.3.3.4. Provide a recessed-mounted, framed, double-wide medicine cabinet (minimum dimension 36 inches by 30 inches) with a mirror over the vanity. The cabinet must match the finished width of the mirror. Select a product with a high-quality mirror resistant to early degrading.

9.5.3.3.5. Provide a GFI duplex outlet mounted in the adjacent wall above the height of the vanity.

9.5.3.3.6. Place a towel bar on the adjacent wall.

9.5.3.3.7. Place an incandescent light fixture over the medicine cabinet, with no exposed bulbs. Avoid fluorescent fixtures in this area. Light fixture should be built-in cove-type lighting extending the full width of the mirror.

9.5.3.3.8. Provide a hot/cold washerless mixer faucet. All shower heads should have flow diverters, and all faucets should have flow limiting devices.

9.5.3.3.9. Provide a full-length, wood- or stainless steel-framed mirror mounted on the bathroom or closet door adjacent to the dressing area. Use sturdy, concealed mounting techniques on all four corners of the mirror. Double-stick tape is not allowed.

9.5.3.3.10. All accessories, fixtures and hardware should be stainless steel, Type 304.

#### 9.5.3.4. Bathroom.

9.5.3.4.1. For new construction and major renovation, do not consider “gang-style” central latrines; room-bath-room configuration is the AFSPC standard. Shared bath should have a common, single entranceway from both rooms.

9.5.3.4.2. Wall finish in bathrooms should be neutral-colored, full-height or wainscot ceramic tile. Provide a non-skid ceramic tile floor.

9.5.3.4.3. Provide a prefabricated, molded fiberglass shower cubicle, minimum of 32 inches in depth, with a solid porcelain finish over cast-iron or terrazzo base. Consider using other materials with hard, solid surfaces, such as “Corian”, and combination shower/bathtub fixtures in lieu of shower cubicle only.

9.5.3.4.4. Provide a commercial hotel-grade, frosted-glass shower door to prevent leaks. If combination shower/bathtub fixtures are installed, use commercial hotel-grade, frosted-glass sliding doors with integral towel bar. Shower curtains are unacceptable.

9.5.3.4.5. Provide a variable-flow, pulsating shower head with water-conservation features. Consider adjustable, variable-height shower heads to accommodate residents of different heights. Also consider installing non-scalding shower fixtures.

9.5.3.4.6. Provide built-in recessed shelves in shower/bathtub for hygiene items.

9.5.3.4.7. Provide built-in recessed soap holders within the shower cubicle to accommodate both rooms.

9.5.3.4.8. For all new construction, install stainless steel combination shower/bathtub fixtures. In all cases, install cement board backer between shower cubicles or combination shower/bathtub fixtures and structural members.

9.5.3.4.9. Provide a white tank-type water closet, with water saver features and quiet operation, elongated bowl, and a split-top seat with matching white lid. Consider solid toilet seats with matching lids in lieu of split-top seats. Install a recessed wall-mounted cabinet over the water closet to store cleaning supplies. Ensure cabinets have sliding doors (no open shelves), are non-metallic, and finished to match vanity.

9.5.3.4.10. Mount two towel bars, 24 inch minimum, within easy reach of the shower/bathtub.

9.5.3.4.11. Provide a recessed toilet paper holder near the water closet.

9.5.3.4.12. Mount two clothes hooks on the backs of bathroom door(s).

9.5.3.4.13. Provide a solid-core bathroom door with a privacy lock.

9.5.3.4.14. Provide high-capacity, 50 cu ft per minute, low-noise exhaust ventilation system for all bathrooms. Ensure system is vented to the exterior of the facility. The system may be switched separately from the bathroom light fixture, or activated by the light switch, but with a built-in delay timer on the fan.

9.5.3.4.15. Provide a ceiling-mounted incandescent light fixture or an indirect light fixture.

9.5.3.4.16. Consider a heat lamp, with delay timer for cold climates.

9.5.3.4.17. Accessories, fixtures, and hardware shall be stainless steel, Type 304.

#### 9.5.3.5. Kitchen.

9.5.3.5.1. Paint walls in kitchen areas to match finishes throughout the module. There should be no bare, exposed, or painted CMU walls.

9.5.3.5.2. Provide a water-resistant, resilient kitchen floor tile or preferable sheet vinyl (Federal Specification L-F-475a(3) Grade B or C). Provide vinyl or wood baseboards.

9.5.3.5.3. All woodwork should match throughout the module.

9.5.3.5.4. Provide sufficient kitchen cabinetry meeting the requirements of the National Kitchen Cabinet Association. Cabinets shall be standard, factory-manufactured products of modular kitchen cabinet suppliers. All cabinets will be constructed of solid wood veneers or hardwood solids of five-ply plywood with wood veneers and hardwood impact edges. All points of hardware attachment (e.g., screws, hinges) must be inserted into solid wood lumber. The finish of exposed surfaces will be a natural or stained finish on solid hardwood or hardwood solids, or plastic laminate on plywood substrate. Provide cabinets with the following minimum storage:

**Table 9.3. Minimum Storage Requirements.**

ITEM	MINIMUM DEPTH	MINIMUM AREA
Wall Cabinet Shelving	12 in	24 sq ft
Base Cabinet Shelving	24 in	24 sq ft
Drawers	24 in	12 sq ft
Countertops	24 in	18 sq ft

9.5.3.5.4.1. Drawers will have side glides with an automatic stop feature. Sides and bottom will be constructed of hardwood or plywood. Drawer fronts should be removable and replaceable. All drawer joints must be dove-tailed. Style and color of all wood must match as well as match existing wood tones in room.

9.5.3.5.4.2. Provide countertops that harmonize in color and design with the cabinets, the appliances, and the floor covering. Do not use butcher block laminate or ceramic tile for countertops. Round all exposed corners. The required minimum vertical separation between countertop and wall cabinets is 1 foot 6 inches. Provide a countertop with a minimum width of 15 inches on each side of the range and sink and on one side of the refrigerator (adjacent to the opening side of the refrigerator door). The required minimum total area of countertop space (exclusive of sink and range space) is 18 sq ft.

9.5.3.5.5. Provide a deep, single-bowl, stainless steel (or other durable, non-corrosive material) sink mounted in wood cabinetry with durable, laminated countertops and backsplashes. Garbage disposal is required for all CONUS locations and optional for overseas locations. Consider a double-bowl sink. Undercounter fluorescent lighting and duplex GFI electrical outlets mounted above the countertop should be provided. Locate the sink between the range and refrigerator, if possible.

9.5.3.5.6. As a minimum, provide a two-burner cooktop and conventional oven, and a separate, dedicated shelf for a microwave oven with separate electrical outlet above the countertop. Install a range hood with light and fan. The hood must be exhausted to the exterior for all new construction and renovation of Type A (central corridor) facilities. Hoods exhausted to the exterior are strongly recommended for renovation of Type B (exterior balcony) facilities, but ductless hoods with air recirculation fans and proper filters are acceptable when warranted by existing construction conditions. Consider a ceramic cooktop, additional burners, and built-in microwave/convection oven unit. Also consider self-cleaning conventional ovens in lieu of microwave/convection oven units.

9.5.3.5.7. Provide a minimum 13 cu ft capacity, frost-free refrigerator configured with a separate compartment, top freezer. Allow sufficient space around the refrigerator for ventilation and cleaning, and ensure an electrical outlet is installed for refrigerator use. The outlet should be installed so as not to be in plain view once the refrigerator is installed. Consider a built-in area for the refrigerator, with plumbing available for optional integral icemaker.

9.5.3.5.8. Provide a standard household or efficiency dishwasher.

9.5.3.5.9. Provide a dining space for two persons in the kitchen, either as a separate table or a countertop/bar stool height counter. Countertop dining spaces should not force the user to face the wall behind the countertop. Provide an operable exterior window when possible.

#### 9.5.3.6. Common Areas.

9.5.3.6.1. For new construction, centralized service areas are required within each dormitory. These areas may be detached from the actual dormitory facility with covered walkways for major renovation/revitalization of existing dorms if space does not permit integrated service areas. Under no circumstances should a dormitory resident be forced to walk through inclement weather for these essential services. Local climates and economics will dictate the scope of services offered.

#### 9.5.3.6.2. Mandatory Service Areas.

Laundry Room(s)

Individual Occupant Storage

Multi-Purpose Rooms

Vending Area

Guest Bathroom

Supply Storage

Dormitory Manager's Office

Utility Space (infrastructure utilities)

Circulation Space

9.5.3.6.3. Optional Service Area. The optional area is a mail room (centralized or spread throughout the dormitory area), since mail service to dormitories may not be possible at all locations, and community kitchens.

#### 9.5.3.6.4. Laundry Room(s) (Mandatory).

9.5.3.6.4.1. Provide one laundry room per floor, if not provided in the central service core located adjacent to and accessible from the lounge. Ensure areas are designed with sound attenuation features.

9.5.3.6.4.2. Wall Finishes. Do not expose duct, conduits, pipes, etc., on ceilings or walls.

9.5.3.6.4.3. Provide a minimum of two floor drains in non-skid quarry tile floor covering. Floor should be sloped to ensure adequate drainage.

9.5.3.6.4.4. Provide one commercial-quality/commercial-sized washer per 8 occupants and one commercial-quality/commercial-sized dryer per 6 occupants. Consider rubber mats to prevent machines from walking. Investigate use of stacked dryers to reduce square footage requirements.

9.5.3.6.4.5. Provide suitable receptacles for washing machines and dryers (hardwire connection not allowed). Washer and dryer connections should be concealed by machines.

Include additional conduit for installation of additional machines in the future.

9.5.3.6.4.6. Provide flush-mounted fluorescent ceiling lights. When possible, make maximum use of natural lighting by exposing room to outside views.

9.5.3.6.4.7. Dryers should be vented to the exterior, not through the roof, using rigid duct system.

9.5.3.6.4.8. Provide a large capacity, low-noise exhaust fan operated by a thermostat, sized to adequately vent moisture-laden air produced by the dryers. Generally, allow sufficient ventilation to expel moisture and heat.

9.5.3.6.4.9. Provide fold-out, wall-mounted ironing boards. Consider providing structurally integrated folding tables or counters with overhead clothes poles/rods. If space allows, provide one table per two dryers.

9.5.3.6.4.10. Provide large utility sink within the laundry room accessible for residents use.

9.5.3.6.4.11. Include a janitor closet with a large utility sink, shelves for storing cleaning supplies, and a space to store a commercial carpet cleaner in each laundry.

9.5.3.6.4.12. Consider wall space for vending machines dispensing laundry products.

#### 9.5.3.6.5. Individual Occupant Storage (Mandatory).

9.5.3.6.5.1. Residents are not expected to keep stereo boxes, skis, and other bulky personal belongings in their rooms. Personal storage conveniently located on the same floor allows for this overflow and provides security. An individual storage cubicle measuring at least 30"w x 96"h x 30"d (deeper or wider, if possible) should be provided for each occupant. Chain-link fence fabric construction, securable by an occupant-provided padlock, is preferred to enable visual inspection for unauthorized items. "Chicken wire" is not acceptable. One smoke/heat detector should be provided in the room, as well as environmental controls. Bicycle storage should be planned for outdoor, covered/enclosed bicycle racks. When existing space does not allow for interior storage (major renovation/revitalization of existing dorms), direct access to individual storage lockers may be from the exterior of the facility. In this case, ensure locker is weather tight.

#### 9.5.3.6.6. Multi-Purpose Rooms (Mandatory).

9.5.3.6.6.1. Provide one multi-purpose room per floor, sized appropriately as a TV room, study room or game room. Consult the *AF Facility Design Guide for Enlisted Dormitories* for recommended net areas. Ideally, these rooms should be located on separate floors, although some existing facilities may not facilitate such separation. In any case, each of the three functions must be provided in physically separated rooms, and should not be

duplicated within the same facility. Game rooms can be used to accommodate pool/table tennis tables or video arcade games. Increasingly, game rooms are being substituted with a “fitness” room, housing universal machines and free weights, stationary bicycles, and other fitness equipment. Consider this type of area in lieu of game rooms.

9.5.3.6.6.2. Provide wall-to-wall multi-colored carpeting. If a fitness room is desired, select finish materials, especially floor covering, accordingly. In addition, investigate the floor structure in existing facilities to ensure it provides sufficient support for a fitness room.

9.5.3.6.6.3. Consider vinyl commercial-grade wall covering. Exposed or painted CMU is prohibited. Also consider installation of non-removable, framed artwork following a well-planned theme.

9.5.3.6.6.4. Use washable drapery window treatment to control glare. Draperies, when viewed from exterior, should resemble occupant rooms to establish consistency.

9.5.3.6.6.5. Acoustically isolate the room from surrounding occupant rooms, hallways, and floors to minimize disturbance. Use door gaskets, sound insulation/attenuation boards, and stagger-stud walls as needed.

9.5.3.6.6.6. Provide indirect incandescent lighting with a dimmer.

9.5.3.6.6.7. Provide duplex GFI electric receptacles at 6 foot interval, with a minimum of two per wall.

9.5.3.6.6.8. Features specific to a TV room include the following:

9.5.3.6.6.8.1. Wire for cable television, with minimum of two receptacles provided on opposite walls.

9.5.3.6.6.8.2. Provide provisions for hook-up of one Class “C” phone, and one commercial, pay telephone.

9.5.3.6.6.9. Features specific to a study room include the following:

9.5.3.6.6.9.1. Install lighting fixtures providing sufficient illumination for studying while minimizing glare on computer monitors.

9.5.3.6.6.9.2. Consider installing communications cable for a local area network (LAN). In any case, install appropriately-sized conduit with wall- or floor-mounted connections for future installation of cable.

9.5.3.6.6.9.3. Consider installation of duplex GFI electric receptacles, flush-mounted in floor. Receptacles should have metal covers.

9.5.3.6.7. Vending Area (Mandatory).

9.5.3.6.7.1. Locate the vending area in a separate room adjacent to the lobby or lounge. Provide built-in counter tops with electrical outlets to accommodate a microwave oven. Vending machines for newspapers, magazines, and other literature should also be located in this area in lieu of the facility entrance.

9.5.3.6.7.2. Wall finishes shall match those of surrounding areas.

9.5.3.6.7.3. At minimum, utilize quarry tile or Vinyl Composition Tile (VCT) to provide a durable floor finish required for the heavy vending machines.

9.5.3.6.7.4. Provide required utility connections to accommodate a commercial ice machine. Include plumbing to provide adequate drainage.

9.5.3.6.7.5. Provide electrical outlets for a minimum of four vending machines.

9.5.3.6.8. Guest Bathroom (Mandatory).

9.5.3.6.8.1. Each dormitory should provide one guest bathroom, handicap accessible, near the main entrance lounge.

9.5.3.6.9. Supply Storage (Mandatory).

9.5.3.6.9.1. Provide one lockable storage area per floor for storing dorm supplies, a limited amount of linens, and vacuums.

9.5.3.6.10. Dormitory Manager's Office (Mandatory).

9.5.3.6.10.1. The dormitory manager is the focal point for the Commander, First Sergeant, and residents, and should be provided a work space within the dormitory to facilitate accomplishment of this comprehensive job. If one individual is responsible for more than one building, only one office is required. The dormitory manager's office should be located on the first floor near the main entrance, with the following characteristics:

9.5.3.6.10.2. The office should be approximately 180 sq ft net area.

9.5.3.6.10.3. Finishes should be comparable to a resident's room.

9.5.3.6.10.4. Provide indirect/recessed fluorescent light fixtures, and smoke/heat detector.

9.5.3.6.10.5. Install multiple phone outlets (minimum of two) to accommodate telephone and FAX. Consider installation conduit for future wiring of a LAN.

9.5.3.6.10.6. Provide duplicate display/enunciator for fire/smoke detection.

9.5.3.6.11. Utility Space (Mandatory).

9.5.3.6.11.1. See Paragraph 9.6 for additional details.

9.5.3.6.12. Circulation Space (Mandatory).

9.5.3.6.12.1. Individual projects will dictate design. See Paragraph 9.5.4 for additional details. As a minimum, central hallway and exterior access balconies should be 60 inches wide.

9.5.3.6.13. Mail Room/Service (Optional).

9.5.3.6.13.1. The AFSPC goal is to provide mail service to each dormitory. The AF is conducting a test at several installations to determine practicality of implementation AF-wide. Until a final determination is made, installations should consult with local postal officials to certify the requirement for mail rooms in dormitories. If required, the following features should be included:

9.5.3.6.13.1.1. Provide one United States Postal Service approved mailbox per resident. See the *AF Facility Design Guide for Enlisted Dormitories* for detailed informa-

tion on mailboxes. The mailboxes may be consolidated in one area, or spread in smaller groups throughout the dormitory compound. While mail service must be convenient for residents, primary emphasis should be placed on convenient delivery and pick-up service. The mailboxes may be located indoors or outdoors, space permitting. However, if an outdoor area is selected, provide a covered area for both the mailboxes and access. Provide one standard letter drop at each mailbox cluster. Parcel lockers should be considered when post office service is limited.

9.5.3.6.13.2. For overseas locations, consult with installation postal officials prior to including mailboxes in the design. Personnel limitations may dictate deletion of mail service to individual dormitories throughout the installation.

#### 9.5.3.6.14. Community Kitchen (Optional).

9.5.3.6.14.1. Provide pleasant, cheerful, home-like decor with wood cabinetry and non-commercial incandescent light fixtures.

9.5.3.6.14.2. Provide a double sink with garbage disposal mounted in wood cabinetry with durable, laminated countertops and backsplashes. Undercounter lighting and duplex GFI electrical outlets mounted above the countertop should be provided.

9.5.3.6.14.3. Provide a built-in residential quality range/oven, range hood and duct system, dishwasher, and refrigerator. Provide a commercial quality microwave oven. Install concealed, appropriately-sized GFI electrical outlets for major appliances.

9.5.3.6.14.4. Provide a small dining area with appropriate seating.

#### 9.5.4. Corridors, Balconies, and Cores.

9.5.4.1. Corridors, balconies, and common areas (cores) serve to connect and nurture the development of neighborhoods on each floor of a dormitory wing. Major cores may contain, in addition to entrances and stairwells, such complex-wide services as offices, mailboxes, bicycle racks, central personal storage units, and dayrooms. Minor cores may house small dayrooms, laundry rooms, quiet study rooms, and kitchen units.

9.5.4.2. Cores, as entry and circulation points, can provide a sense of orientation to and within the complex or neighborhood. They present opportunities for designers to manipulate the scale and massing of a large complex and allow the introduction of material and detailing diversity. Whether climate dictates external balconies or internal corridors, these spaces should be well-lit, and easy to clean and maintain.

9.5.4.3. Exposed or painted CMU walls are not acceptable finishes. Use appropriate paint, vinyl wall covering, or other products.

9.5.4.4. Recess all wall-mounted fixtures (i.e., fire extinguisher, water fountain, telephone, emergency lights). Finish enclosures to match adjacent wall colors and finishes. All fire equipment, except pull-boxes and fire extinguishers, shall have a finish which coordinates with the adjacent walls.

#### 9.5.4.5. Floor Finishes.

9.5.4.5.1. Avoid long hallways which promote "tunnel vision" and allow sound to travel. Break up long corridors by using separate wings or offsetting floor plans. Articulate corridor



surfaces through varied ceiling, wall, lighting, and carpet pattern treatment. An example of a carpet pattern which can aid in reducing the “tunnel” effect is carpet bordering the perimeter of the hall with perpendicular accents every 6 to 8 feet (see Figure 9.1.). Avoid horizontal lines, such as chair rails. Emphasize vertical elements, such as columns, to visually break up long hallways. Slight changes in hall width break continuous wall surfaces.

9.5.4.5.2. Install commercial-quality mats with accessible clean-outs to prolong carpet life and reduce maintenance.

9.5.4.5.3. Coordinate commercial-grade vinyl stair tread on interior stairs with commercial-grade carpet landings. Consider other acoustical treatment in lieu of carpeted landings in cold-weather climates to reduce noise/echo level in interior stairwells. In any case, non-slip, replaceable stair tread, such as aluminum nosings with safety tread, should be installed. Do not design interior or exterior stairways resembling fire escapes (metal stairs, open metal grating, etc.).

9.5.4.6. Install adequate corridor lighting to meet safety and security requirements. Consider individual exterior lighting for each room (on Type B facilities), controlled by a switch within the occupant’s room.

9.5.4.7. Use indirect and/or recessed lighting to reduce shadows and glare, and protect fixtures from damage. Track lighting, although architecturally pleasing, may not be the best choice for a dormitory because of its high susceptibility for damage and additional cost in comparison to more conventional lighting. Use of lighted coves and recessed can lighting may be more appropriate and still provide a pleasing look for dormitory residents.

9.5.4.8. Provide an electrical receptacle a minimum of every 15 feet for carpet cleaning equipment. In addition, where carpeting is installed on stairways and/or landings, provide a receptacle at intermediate landing(s).

9.5.4.9. Provide duplex electrical receptacles every 6 feet, with a minimum of two per wall, located near the floor (one switched from the door). Hard-wire the heat and smoke detector, with battery backup, and all wiring concealed.

9.5.4.10. Construct all-glass store-front exterior doors to increase natural light in hallways. Consider vestibules and double-entranceways in cold-weather climates.

9.5.4.11. Provide internal corridor fire doors with only push-plate/pull handle and door closer--no panic hardware. Consider magnetic door holders connected to the facility fire alarm system.

9.5.4.12. Provide solid-core entry doors with one-way door viewer (peephole) for each room. Consider use of fiberglass or other non-corrosive doors in certain climates. Install sound attenuation gaskets and weatherproof stripping, as needed, to reduce transmitted noise and minimize energy loss. Adequate weatherproofing is extremely important for Type B facilities, which have occupant doors directly exposed to the weather. Provide master key locksets to conform with the installation keying system to allow easy change of locks when rooms are vacated or keys are misplaced. Consider use of key-removable cores to improve security due to frequent resident moves and ease of maintenance. Avoid use of self-locking lock sets.

#### 9.5.5. Specific Standards.

9.5.5.1. The following specific standards should be followed in all dormitory applications in accordance with the installation FEP.

9.5.5.1.1. Carpet.

9.5.5.1.1.1. Use a cut/loop or loop, minimum 28 oz, high-density carpet rated for heavy wear. Carpet should be multi-colored to disguise stains and wear from normal foot traffic. In addition, occupant rooms require installation of a carpet pad; carpet tiles are not acceptable. Install a threshold at room entrances to ensure a smooth transition between room and corridor floor finish.

9.5.5.1.2. Painted Walls.

9.5.5.1.2.1. Bare, exposed, or concrete walls should be avoided. When finishing surfaces with paint, use semi-gloss paint, except in the bathrooms and kitchens. In these areas, use high-gloss epoxy. There are many other products available, including spray-on epoxy materials to fill and level exposed concrete masonry unit, producing a smooth, firm finish ready for wall covering/finish.

9.5.5.1.2.2. Conceal all wiring, pipes, and ducts behind walls or above ceilings. Use of exposed raceways should be avoided.

9.5.5.1.3. Vinyl Wall Covering.

9.5.5.1.3.1. Commercial-grade Type II vinyl wall covering should only be used in common areas and corridors. Do not use in bathrooms, laundry rooms, or sleeping/living rooms.

9.5.5.1.4. Ceiling Systems.

9.5.5.1.4.1. Utilize spray on medium-texture sound absorbing ceiling finish. Avoid large "pebble"-type or other rough-texture finish, which is difficult to match with existing conditions after repair. In bathrooms and other high-moisture areas, provide a textured, water-proof gypsum board or other hard ceiling surface with high-gloss paint finish. Lay-in acoustical tile grid ceiling systems are not permitted.

9.5.5.1.5. Lighting.

9.5.5.1.5.1. Lighting throughout the facility must meet minimum standards as outlined in the IES *Lighting Handbook*. Consider increasing illumination in certain areas for security, safety, and health reasons. Particular areas on which to focus attention include sleeping/living areas (over desks) and balconies.

9.5.5.1.6. Receptacles.

9.5.5.1.6.1. All receptacles, including telephone, electrical, local area network, and cable television, should be installed 18 inches above the floor, except where noted in kitchens and bathrooms. Receptacle covers and switch plates should match in both color and style.

9.5.5.1.7. Artwork.

9.5.5.1.7.1. All artwork in common areas, entrances and corridors shall be installed in matching mats and frames. In addition, artwork shall coordinate with interior color scheme and follow a particular theme. Frames should have a security lock mechanism to ensure artwork remains level with the floor and in the proper location. Designate areas for

bulletin boards to post community information and flyers in order to discourage residents from taping items on walls and doors.

## **9.6. Utilities/Heating, Ventilation And Air Conditioning (Hvac):**

### **9.6.1. Mechanical Spaces.**

9.6.1.1. The mechanical space may be totally integrated into the dormitory structure or may include an outdoor utility court located adjacent to the dormitory. If an outdoor court is provided, ensure that the area is properly screened from view using finishes matching those of the dormitory exterior. Locate all meters, transformers and other utility equipment in this outdoor utility area. Ensure adequate clearance on all sides of the equipment for maintenance and proper air flow. Do not locate equipment requiring maintenance or which will be visible, on the roof.

9.6.1.2. Place mechanical room equipment on the floor, on concrete pads or cabinets, or on racks for ease of maintenance. Choose base-mounted pumps over flange-mounted pumps. Provide a minimum of 36 inches of clear space on five sides of all air handlers to allow for maintenance. Install sufficient isolation valves in the system to provide maintainers the flexibility of repairing/maintaining a portion of the HVAC/domestic water system without affecting the entire dormitory.

### **9.6.2. HVAC Distribution System.**

9.6.2.1. A perimeter hot/cold water distribution system with fan/coil units should be provided in each conditioned space, except that fan/coil units are not permitted in humid areas. Engineering Technical Letter (ETL) 93-2 addresses mechanical design in humid areas. Each unit must have individual controls, to allow occupants to tailor the room temperature independent of the rest of the dormitory. A four-pipe system may be necessary for occupant comfort in some areas to provide heating and cooling simultaneously in different portions of the building. Fan/coil units and associated piping for HVAC should be located above the ceiling to maximize useable square footage. Ensure adequate access panels are installed to permit easy maintenance and repair.

### **9.6.3. Domestic Hot Water System.**

9.6.3.1. Provide circulating pumps and storage tanks on the domestic hot water system to make hot water instantly available to all areas. Consider providing a separate domestic hot water system for laundry rooms.

### **9.6.4. Electrical Distribution System.**

9.6.4.1. Provide sufficient electrical capacity (receptacles and amperage) to allow for the power requirements of the modern dorm occupant (stereos, televisions, computers, microwaves, coffee makers, etc.). Allow for a continual increase in dorm occupants' electrical requirements and Vision 2020 kitchen requirements by leaving at least 20 percent extra capacity in mains and panels after current safety factors are considered.

### **9.6.5. Emergency Lighting System.**

9.6.5.1. Install emergency-battery ballast at the corridor and stairwell lights which must be used in emergencies. Avoid central battery packs for emergency light systems due to unreliability and high maintenance costs.

## **9.7. Signage:**

### 9.7.1. Applicability.

9.7.1.1. Finish, size, and placement of signs is to be standardized, and in accordance with the installation FEP and other chapters of this handbook.

### 9.7.2. Exterior Signage.

9.7.2.1. Limit exterior signs to facility number and unit designation. Avoid miscellaneous emblems, logos and direct paint applications. Room number/occupant identification signs for dormitories with a Type B plan will be as specified below.

### 9.7.3. Interior Signage.

9.7.3.1. Attach room number/occupant identification to the wall next to the door. Identification holders should be manufactured from a durable, non-oxidizing material (Plexiglas) with a compartment for a sliding nameplate and an integral day-sleeper indicator.

## 9.8. Furnishings:

### 9.8.1. Policy.

9.8.1.1. Only new furniture should be placed in renovated or new dorms. Each installation may utilize two styles of bedroom furniture; however, only one style of furniture will be used in all sleeping rooms within a given dormitory building. Exceptions to this may be granted if funding is not available to purchase furniture for the entire building at one time. In this case, only one style of sleeping room furniture per floor may be used. If a waiver from Federal Prison Industries (FPI) for the purchase of the required furniture style is not granted, they may agree to produce the style and finish of furniture required. This "substitution" would be considered one of the two original styles allowed because it would be the same in appearance. Lounges may have a furniture style other than that of the sleeping rooms.

9.8.1.2. Any furniture style that meets or exceeds all of the standards listed below for each piece of furniture may be purchased. If the furniture style selected is deficient in one or more of the standards, a waiver must be granted by the Installation Commander.

9.8.1.3. This policy is applicable for purchasing dormitory furniture for new construction, major facility upgrades, or when facility furnishings need replacement due to damage or normal wear.

### 9.8.2. Acquisition.

9.8.2.1. Applicable Federal Acquisition Regulation (FAR) procedures must be followed when acquiring dormitory furniture. Open market purchases are authorized if waivers from mandatory sources (FAR Part 8) are received. Waivers from Federal Prison Industries (FPI) are required before ordering from other sources. Contact the local contracting office for processing waiver requests. Disputes regarding price, quality, or suitability of supplies produced by FPI are subject to arbitration as specified in 18 U.S.C. 4124. FPI will consider requests for waivers based on documented disparities in price, inability to meet reasonable delivery dates, and disqualifying variations in function and "match". While FPI is a required source for certain items, their proposed prices are subject to negotiation by the local contracting office.

### 9.8.3. Design.

9.8.3.1. Ensure Architect-Engineer (A-E) firms, Housing Managers, Furnishings Management Offices, or in-house interior designers, provide the furniture layout to the AFSPC Interior Designer for approval. The layout should be tailored to individual rooms and other common areas, and include technical specifications for furniture. Prior to actual furniture purchase, the office providing the initial furniture layout must confirm that the furniture specified for the dormitory will be adequate. Of particular interest are technical specifications, style, finish, and sizes.

9.8.3.2. During the furniture selection process, it is important to compare manufacturers' construction features with AFSPC standards. Any deviation from the following construction standards will require a waiver from the Installation Commander.

9.8.3.3. The approval of the AFSPC Interior Designer will be required for all furniture selections for all MILCON projects. Ensure coordination and approval is received from AFSPC prior to purchasing new furniture.

#### 9.8.4. Quantities.

9.8.4.1. Furniture quantities should be based on typical room requirements and furniture placement as space allows.

#### 9.8.5. Standards.

9.8.5.1. All furniture will be constructed of solid wood veneers or hardwood solids of five-ply plywood with wood veneers and hardwood impact edges. Furniture backs should be of equal thickness to sides. Backs of pieces shall be a minimum of 1/4 inch thick; stapled construction is not acceptable.

9.8.5.2. All points of hardware attachment (e.g., screws, hinges) must be inserted into solid wood lumber.

9.8.5.3. All exterior exposed surfaces will be made of solid wood veneer unless otherwise specified as a specific feature, such as night stand or desk tops. These tops are generally surfaced in a plastic laminate to match the wood grain and finish of the other exposed surfaces.

9.8.5.4. Drawers will have side glides with an automatic stop feature. Sides and bottom will be constructed of hardwood or plywood. Drawer fronts should be removable and replaceable. All drawer joints must be dove-tailed.

9.8.5.5. Style and color of all wood furniture in each room must match as well as match existing wood tones in room.

9.8.5.6. Upholstery on furniture will meet technical provisions in accordance with *MIL HDBK-1190*. Colors/patterns shall be selected in accordance with the installation FEP. If guidance is not available, neutral colors/patterns should be selected to complement the color of room carpet and wall and ceiling finishes.

**Table 9.4. Climate Design Guidance.**

CLIMATE	DESIGN GUIDANCE
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COLD	In cold-weather regions, orient and configure buildings to minimize energy losses, maximize solar gain, and reduce wind effects. Do not face building entrances northward. Consider Type A dormitory plan. Consider local practices and indigenous plants and materials when landscaping.
TEMPERATE	In moderate regions, balance heat gains and losses by employing carefully-calculated shading coefficients from roof overhangs, louvers, or other devices to reject summer sun and admit winter radiation. Either Type A or Type B dormitories can be utilized.
TROPICAL	In hot, humid regions, orient and configure buildings to maximize effects of prevailing winds. Design for cross-ventilation within buildings, and where possible, individual rooms. Consider Type B dormitory plan.
ARID	In hot, dry regions, minimize solar gain with deep roof overhangs, balconies, and other shading devices. Avoid east-west facing openings where possible. Consider Type B dormitory plan. Consider local practices and indigenous plants and materials when landscaping. Avoid high-maintenance, high water-use plants.

**Table 9.5. UEH Dormitory Bedroom Items.**

NOMENCLATURE	2-PERSON ROOM QUANTITY	PRIVATE ROOM QUANTITY
Bed, single with headboard (Note 1)	2	1
Mattress, firm inner spring (38" x 80") (Note 1)	2	1
Box spring (38" x 80") (Note 1)	2	1
Wall system (Note 3)	Note 2	Note 2
Chair, upholstered (dual purpose desk/lounge)	2	1
Lamp (table or floor with three-way switch)	2	1
Refrigerator, 13.0 cubic feet	1	1
Draperies, vertical blinds, or a combination.	Set	Set
Bedspread (quilted and color coordinated with decor)	2	1
Night stand with lamp	2	1
Desk with shelving and drawers (width and height should comfortably accommodate use of personal computer)	1	1

Note 1: For single occupancy rooms, double bed with matching mattress and box spring will be provided.

Note 2: Each occupant will be afforded one, three-drawer chest of drawers and two shelves for personal use.

Note 3: A pre-manufactured grommet hole should be provided in the rear of the wall system to accommodate connection of stereo or other electronic equipment.

Note 4: For UNCOQ (E7-E9), one easy chair shall also be provided in addition to the items above.

**Table 9.6. UH Dormitory Common Areas.**

AREA	NOMENCLATURE	QUANTITY
TV LOUNGE	Chair, easy	As needed
	Chair, recliner	As needed
	Sofa	As needed
	Table, occasional	As needed
	Lamps	As needed
	Television set, color (wide screen, minimum 40", with VCR)	1
	Decor set (planters, paintings, pictures, etc.)	1 Set
STUDY AREA	Chair, study	As needed
	Table, conference	As needed
	Draperies, vertical blinds, or combination	1 Set
	Study cubicles, with partitions	As needed
	Lamps	As needed
DORMITORY MANAGER'S OFFICE	Desk	1
	Desk chair	1
	Chair, easy, or sofa	1
	Book shelves	As needed
	Draperies, vertical blinds, or combination	1 Set
KITCHEN	Microwave	2 per building
	Range/oven	1 per building
	Small dining room table with chairs	As needed
	Refrigerator, 9.5 CF minimum	1
MAINTENANCE EQUIPMENT	Vacuum cleaner, wet or dry (depending on carpet type)	1 per 6 rooms
	Carpet shampooer/steam cleaner	1 per floor
GAME ROOM	Pool table, cues and balls	As needed
	Table tennis table and equipment	As needed
	Planters, paintings	As needed
	Game tables	As needed
	Chair	As needed
Note 1: Task lighting, such as a hutch with under-cabinet lighting, should be provided for the dormitory manager. In any case, sufficient lighting in accordance with the IES Lighting Handbook must be provided by a source other than a table lamp.		



EARNEST O. ROBBINS, II, Colonel, USAF  
The Civil Engineer

## Attachment 1

## RESIDENTIAL INTERIOR DESIGN MATERIALS SELECTION CHART

Table A1.1. Selection Chart.

	<i>HEAVY-USE</i>	
<i>MATERIALS</i>	<i>high traffic areas, entrance foyers, kitchens, bathrooms, stairwells, laundry, vending areas</i>	
	<i>DORMITORY</i>	<i>FAMILY HOUSING</i>
<i>FLOOR</i>	<i>ceramic tilequarry tilevinyl composition tile</i>	<i>ceramic tile sheet vinylwoodcarpet (looped)</i>
<i>BASE</i>	<i>ceramic tilequarry tilerubber basevinyl base</i>	<i>ceramic tilewoodvinyl base</i>
<i>WALLS</i>	<i>ceramic tilepaintplastic laminate</i>	<i>paintvinyl wallcovering (type II)</i>
<i>CHAIR RAIL</i>	<i>molded plasticplastic laminatewood</i>	<i>wood</i>
<i>CEILING</i>	<i>acoustical tile gypsum board</i>	<i>gypsum board</i>
<i>LIGHTING</i>	<i>fluorescentincandescent</i>	<i>fluorescentincandescent</i>
<i>WINDOW COVERING</i>	<i>vertical blindshorizontal blinds</i>	<i>shadeslined draperies horizontal blinds</i>
<i>UPHOLSTERY</i>	<i>vinylfabric (50,000+ DR)</i>	<i>NA</i>
	<i>MEDIUM-USE</i>	
<i>MATERIALS</i>	<i>corridors, hallways, dayrooms, family room, dining rooms, TV rooms, offices</i>	
	<i>DORMITORY</i>	<i>FAMILY HOUSING</i>
<i>FLOOR</i>	<i>carpet(level loop or cut &amp; loop)</i>	<i>carpet (cut)wood</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>vinyl wallcovering (type II)paint</i>	<i>paintvinyl wallcoveringwallpaper</i>
<i>CHAIR RAIL</i>	<i>wood</i>	<i>wood</i>

<i>CEILING</i>	<i>acoustical tilegypsum board</i>	<i>gypsum board</i>
<i>LIGHTING</i>	<i>fluorescent incandescent</i>	<i>fluorescentincandescent</i>
<i>WINDOW COVERING</i>	<i>vertical blindshorizontal blinds</i>	<i>shadeslined draperieshorizontal blindsvertical blindssheer</i>
<i>UPHOLSTERY</i>	<i>vinylfabric (25,000+ DR)</i>	<i>NA</i>
	<i>LIGHT-USE</i>	
<i>MATERIALS</i>	<i>bedrooms, dressing area, sleeping areas</i>	
	<i>DORMITORY</i>	<i>FAMILY HOUSING</i>
<i>FLOOR</i>	<i>carpet (loop, cut &amp; loop)</i>	<i>carpet (cut)</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paint</i>	<i>paintvinyl wallcoveringwallpaper</i>
<i>CHAIR RAIL</i>	<i>wood</i>	<i>wood</i>
<i>CEILING</i>	<i>gypsum board</i>	<i>gypsum board</i>
<i>LIGHTING</i>	<i>incandescent</i>	<i>incandescent</i>
<i>WINDOW COVERING</i>	<i>vertical blindshorizontal blindsblack-out draperies</i>	<i>shadeslined draperiesvertical blindshorizontal blindssheers</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)</i>	<i>NA</i>

## Attachment 2

## HOSPITALITY/LODGING INTERIOR DESIGN MATERIAL SELECTION CHART

Table A2.1. Selection Chart.

	<i>HEAVY-USE</i>	
<i>MATERIALS</i>	<i>registration desks, lobby, foyers, stairwells, elevators, corridors, laundry rooms, snack areas, vending and restrooms,</i>	
	<i>HOSPITALITY/LODGING</i>	
<i>FLOOR</i>	<i>carpet (loop)vinyl composition tileceramic tilequarry tile</i>	
<i>BASE</i>	<i>rubber basevinyl basewoodceramic tilequarry tile</i>	
<i>WALLS</i>	<i>paintceramic tilevinyl wallcovering (Type III or II)fabric wallcovering (heavy duty)brick (if carried in from the exterior)</i>	
<i>CHAIR RAIL</i>	<i>molded plasticplastic laminatewood</i>	
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>	
<i>LIGHTING</i>	<i>fluorescentincandescent</i>	
<i>WINDOW COVERING</i>	<i>lined draperieshorizontal blindsvertical blinds</i>	
<i>UPHOLSTERY</i>	<i>fabric (50,000+ DR)</i>	
	<i>MEDIUM-USE</i>	
<i>MATERIALS</i>	<i>management and administrative area,</i>	
	<i>HOSPITALITY/LODGING</i>	
<i>FLOOR</i>	<i>carpet (loop, cut &amp; loop)</i>	
<i>BASE</i>	<i>rubber basevinyl basewood</i>	
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)</i>	
<i>CHAIR RAIL</i>	<i>not normally used</i>	
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>	
<i>LIGHTING</i>	<i>fluorescent</i>	

<i>WINDOW COVERING</i>	<i>lined draperieshorizontal blindsvertical blinds</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)</i>
	<i>LIGHT-USE</i>
<i>MATERIALS</i>	<i>bedrooms, dressing area,</i>
	<i>HOSPITALITY/LODGING</i>
<i>FLOOR</i>	<i>carpet (loop, cut &amp; loop)</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)fabric wallcovering (heavy duty)</i>
<i>CHAIR RAIL</i>	<i>not normally used</i>
<i>CEILING</i>	<i>gypsum board</i>
<i>LIGHTING</i>	<i>incandescent</i>
<i>WINDOW COVERING</i>	<i>black-out draperieshorizontal blindsvertical blinds</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)</i>

## Attachment 3

## FOOD SERVICE AREA INTERIOR DESIGN MATERIAL SELECTION CHART

Table A3.1. Selection Chart.

	<i>HEAVY-USE</i>	
<i>MATERIALS</i>	<i>high traffic areas, lobby, wet areas, restrooms, corridors, and serving lines</i>	
	<i>FOOD SERVICE</i>	
<i>FLOOR</i>	<i>carpet (loop, cut and loop) vinyl composition tile ceramic tile quarry tile</i>	
<i>BASE</i>	<i>rubber base vinyl base ceramic tile quarry tile</i>	
<i>WALLS</i>	<i>paint ceramic tile vinyl wallcovering (Type III or II)</i>	
<i>CHAIR RAIL</i>	<i>molded plastic plastic laminate wood</i>	
<i>CEILING</i>	<i>gypsum board (water resistant)</i>	
<i>LIGHTING</i>	<i>fluorescent incandescent</i>	
<i>WINDOW COVERING</i>	<i>horizontal blinds vertical blinds</i>	
<i>UPHOLSTERY</i>	<i>fabric (50,000+ DR) vinyl</i>	
	<i>MEDIUM-USE</i>	
<i>MATERIALS</i>	<i>management and administrative areas</i>	
	<i>FOOD SERVICE</i>	
<i>FLOOR</i>	<i>carpet (loop) vinyl composition tile</i>	
<i>BASE</i>	<i>rubber base vinyl base</i>	
<i>WALLS</i>	<i>paint vinyl wallcovering (Type II)</i>	
<i>CHAIR RAIL</i>	<i>not normally used</i>	
<i>CEILING</i>	<i>gypsum board acoustical tile</i>	
<i>LIGHTING</i>	<i>fluorescent incandescent</i>	
<i>WINDOW COVERING</i>	<i>horizontal blinds vertical blinds</i>	

<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)</i>
	<i>LIGHT-USE</i>
<i>MATERIALS</i>	<i>special or private dining areas</i>
	<i>FOOD SERVICE</i>
<i>FLOOR</i>	<i>carpet (loop, cut and loop)</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)</i>
<i>CHAIR RAIL</i>	<i>wood</i>
<i>CEILING</i>	<i>gypsum board</i>
<i>LIGHTING</i>	<i>incandescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i> <i>sheers</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)</i>

## Attachment 4

## OFFICE/ADMINISTRATIVE INTERIOR DESIGN MATERIALS SELECTION CHART

Table A4.1. Section Chart.

	<i>HEAVY-USE</i>
<i>MATERIALS</i>	<i>entrances, foyers, lobbies, main circulation corridors, stairwells, elevators, rest rooms, large conference or meeting rooms, snack bars, coffee areas, loading dock and media production areas</i>
	<i>OFFICE/ADMINISTRATIVE</i>
<i>FLOOR</i>	<i>carpet (loop)quarry tile ceramic tile</i>
<i>BASE</i>	<i>rubber basevinyl basewoodquarry tileceramic tile</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (Type II)ceramic tile</i>
<i>CHAIR RAIL</i>	<i>woodmolded plastic</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (50,000+ DR)vinyl</i>
	<i>MEDIUM-USE</i>
<i>MATERIALS</i>	<i>internal circulation, staff office areas and small conference rooms</i>
	<i>OFFICE/ADMINISTRATIVE</i>
<i>FLOOR</i>	<i>carpet (loop)</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)fabric wallcovering (heavy duty)</i>
<i>CHAIR RAIL</i>	<i>woodmolded plastic</i>
<i>CEILING</i>	<i>acoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>



<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)</i>
	<i>LIGHT-USE</i>
<i>MATERIALS</i>	<i>commander's suite and private office areas</i>
	<i>OFFICE/ADMINISTRATIVE</i>
<i>FLOOR</i>	<i>carpet (loop, cut and loop, cut)</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (Type I or II)fabric wall-covering wood (wainscot)</i>
<i>CHAIR RAIL</i>	<i>wood</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)leather</i>

## Attachment 5

## MAINTENANCE /WAREHOUSE INTERIOR DESIGN MATERIALS SELECTION CHART

Table A5.1. Selection Chart.

	<i>HEAVY-USE</i>
<i>MATERIALS</i>	<i>areas constantly subject to traffic, cleaning, abrasion, weather, or other deterrents to building finishes</i>
	<i>MAINTENANCE/WAREHOUSE</i>
<i>FLOOR</i>	<i>concrete (sealed)quarry tile ceramic tile</i>
<i>BASE</i>	<i>rubber basevinyl basequarry tileceramic tile</i>
<i>WALLS</i>	<i>paint</i>
<i>CHAIR RAIL</i>	<i>NA</i>
<i>CEILING</i>	<i>exposedgypsum board (water resistant)</i>
<i>LIGHTING</i>	<i>HIDfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blinds</i>
<i>UPHOLSTERY</i>	<i>NA</i>
	<i>MEDIUM-USE</i>
<i>MATERIALS</i>	<i>administrative areas that are located separately from the heavy-use areas</i>
	<i>MAINTENANCE/WAREHOUSE</i>
<i>FLOOR</i>	<i>carpet (loop)vinyl composition tile</i>
<i>BASE</i>	<i>rubber basevinyl base</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (Type II)</i>
<i>CHAIR RAIL</i>	<i>molded plastic</i>
<i>CEILING</i>	<i>acoustical tile</i>
<i>LIGHTING</i>	<i>fluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blinds</i>

<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)vinyl</i>
	<i>LIGHT-USE</i>
<i>MATERIALS</i>	<i>commander's suite if separate from high-use areas</i>
	<i>MAINTENANCE/WAREHOUSE</i>
<i>FLOOR</i>	<i>carpet (loop, cut and loop, cut)</i>
<i>BASE</i>	<i>vinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcoveringfabric wallcovering</i>
<i>CHAIR RAIL</i>	<i>wood</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)leather</i>

## Attachment 6

## RECREATION INTERIOR DESIGN MATERIALS SELECTION CHART

Table A6.1. Selection Chart.

	<i>HEAVY-USE</i>
<i>MATERIALS</i>	<i>most areas because of the high volume of customers - entrances, foyers, lobbies, main circulation corridors, stairwells, elevators, rest rooms, locker rooms, weight rooms, meeting rooms, snack bars, coffee areas, kitchen and eating areas.</i>
	<i>RECREATION</i>
<i>FLOOR</i>	<i>carpet (loop)quarry tile ceramic tilevinyl composition tilewood</i>
<i>BASE</i>	<i>rubber basevinyl basequarry tileceramic tile</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type III or II)ceramic tileacoustical wallcovering (heavy duty)</i>
<i>CHAIR RAIL</i>	<i>woodmolded plastic</i>
<i>CEILING</i>	<i>gypsum board (water resistant)acoustical tileexposed</i>
<i>LIGHTING</i>	<i>incandescentfluorescentHID</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blinds</i>
<i>UPHOLSTERY</i>	<i>fabric (50,000+ DR)vinyl</i>
	<i>MEDIUM-USE</i>
<i>MATERIALS</i>	<i>internal circulation, staff offices and administration areas</i>
	<i>RECREATION</i>
<i>FLOOR</i>	<i>carpet (loop)</i>
<i>BASE</i>	<i>rubber basevinyl base</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)fabric wallcovering (heavy duty)acoustical wall treatment (heavy duty)</i>
<i>CHAIR RAIL</i>	<i>woodmolded plastic</i>

<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescentHID</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (50,000+ DR)vinyl</i>
	<i>LIGHT-USE</i>
<i>MATERIALS</i>	<i>Commander's suite</i>
	<i>RECREATION</i>
<i>FLOOR</i>	<i>carpet (loop, cut and loop, cut)</i>
<i>BASE</i>	<i>rubber basevinyl base</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)fabric wallcovering (heavy duty)acoustical wall treatment (heavy duty)</i>
<i>CHAIR RAIL</i>	<i>wood</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)</i>

## Attachment 7

## MEDICAL INTERIOR DESIGN MATERIALS SELECTION CHART

Table A7.1. Selection Chart.

	<i>HEAVY-USE</i>
<i>MATERIALS</i>	<i>clean areas, patient rooms, wet areas, loading docks, selected corridors, restrooms, locker rooms, and areas where chemicals are used</i>
	<i>MEDICAL</i>
<i>FLOOR</i>	<i>vinyl composition tilesheet vinylquarry tile ceramic tile</i>
<i>BASE</i>	<i>rubber basevinyl basesheet vinyl (wrapped cove base)quarry tileceramic tile</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)ceramic tile</i>
<i>CHAIR RAIL</i>	<i>woodmolded plastic</i>
<i>CEILING</i>	<i>gypsum board (water resistant)acoustical tileexposed</i>
<i>LIGHTING</i>	<i>fluorescentHID</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (50,000+ DR)vinyl</i>
	<i>MEDIUM-USE</i>
<i>MATERIALS</i>	<i>patient waiting areas, administrative and doctor's offices, and selected corridors</i>
	<i>MEDICAL</i>
<i>FLOOR</i>	<i>carpet (loop)vinyl composition tile</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)acoustical wall treatment (heavy duty)</i>
<i>CHAIR RAIL</i>	<i>molded plastic</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>

<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (50,000+ DR)vinyl</i>
	<i>LIGHT-USE</i>
<i>MATERIALS</i>	<i>Commander's suite and conference rooms</i>
	<i>MEDICAL</i>
<i>FLOOR</i>	<i>carpet (loop, cut and loop, cut)vinyl composition tile</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcoveringfabric wallcoveringacousti- cal wall treatment</i>
<i>CHAIR RAIL</i>	<i>wood</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)vinyl</i>

## Attachment 8

## EDUCATIONAL INTERIOR DESIGN MATERIALS SELECTION CHART

Table A8.1. Selection Chart.

	<i>HEAVY-USE</i>
<i>MATERIALS</i>	<i>entrances, foyers, snack bar and cafeteria service areas, restrooms, fitness areas, simulator rooms and technical classrooms</i>
	<i>EDUCATIONAL</i>
<i>FLOOR</i>	<i>carpet (loop)quarry tile ceramic tilevinyl composition tile</i>
<i>BASE</i>	<i>rubber basevinyl basewoodquarry tileceramic tile</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)ceramic tile</i>
<i>CHAIR RAIL</i>	<i>molded plastic</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>HIDfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blinds</i>
<i>UPHOLSTERY</i>	<i>molded plasticvinyl</i>
	<i>MEDIUM-USE</i>
<i>MATERIALS</i>	<i>administrative offices, conference and briefing rooms, classrooms and corridors</i>
	<i>EDUCATIONAL</i>
<i>FLOOR</i>	<i>carpet (loop)</i>
<i>BASE</i>	<i>rubber basevinyl base</i>
<i>WALLS</i>	<i>paintvinyl wallcovering (type II)acoustical wall treatment (heavy duty)</i>
<i>CHAIR RAIL</i>	<i>woodmolded plastic</i>
<i>CEILING</i>	<i>acoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>



<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)vinylmolded plasticwood</i>
	<i>LIGHT-USE</i>
<i>MATERIALS</i>	<i>principal's offices and commander's suite</i>
	<i>EDUCATIONAL</i>
<i>FLOOR</i>	<i>carpet (loop, cut and loop, cut)</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcoveringfabric wallcovering</i>
<i>CHAIR RAIL</i>	<i>woodmolded plastic</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)vinylmolded plasticwood</i>

## Attachment 9

## RELIGIOUS ACTIVITIES FACILITIES DESIGN MATERIALS SELECTION CHART

Table A9.1. Selection Chart.

	<i>HEAVY-USE</i> worship area, sanctuary, narthex, choir room, cry room, blessed sacrament and reconciliation room, entrance foyer, kitchen, cafeteria/assembly room, activities center, restrooms
<i>MATERIALS</i>	
	<i>RELIGIOUS ACTIVITIES</i>
<i>FLOOR</i>	carpet (loop)quarry tileceramic tile vinyl composition tilevinyl sheet flooring
<i>BASE</i>	rubber basevinyl basewoodquarry tileceramic tile
<i>WALLS</i>	paintvinyl wallcovering (type II)ceramic tile
<i>CHAIR RAIL</i>	molded plastic wood
<i>CEILING</i>	gypsum boardacoustical tile (not appropriate for sanctuary)
<i>LIGHTING</i>	<i>HID</i> fluorescent
<i>WINDOW COVERING</i>	horizontal blindsvertical blinds
<i>UPHOLSTERY</i>	fabric (50,000+ DR)molded plasticvinylwood
	<i>MEDIUM-USE</i> administrative offices, conference and briefing rooms, classrooms and corridors
<i>MATERIALS</i>	
	<i>RELIGIOUS ACTIVITIES</i>
<i>FLOOR</i>	carpet (loop)vinyl composition tile
<i>BASE</i>	rubber basevinyl base
<i>WALLS</i>	paintvinyl wallcovering (type II)acoustical wall treatment (heavy duty)
<i>CHAIR RAIL</i>	woodmolded plastic
<i>CEILING</i>	acoustical tile

<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)vinylmolded plasticwood</i>
	<i>LIGHT-USEchaplain's office and commander's suite</i>
<i>MATERIALS</i>	
	<i>RELIGIOUS ACTIVITIES</i>
<i>FLOOR</i>	<i>carpet (loop, cut and loop, cut)</i>
<i>BASE</i>	<i>rubber basevinyl basewood</i>
<i>WALLS</i>	<i>paintvinyl wallcoveringfabric wallcovering</i>
<i>CHAIR RAIL</i>	<i>wood</i>
<i>CEILING</i>	<i>gypsum boardacoustical tile</i>
<i>LIGHTING</i>	<i>incandescentfluorescent</i>
<i>WINDOW COVERING</i>	<i>horizontal blindsvertical blindslined drapes</i>
<i>UPHOLSTERY</i>	<i>fabric (25,000+ DR)wood</i>